Sailing Directions for the Coast and Harbours of North America from Halifax in Nova Scotia to the Gulf of Florida

Published by James Imray,
London, 1852

SAILING DIRECTIONS

FOR THE

COAST AND HARBOURS

OF

NORTH AMERICA,

FROM

HALIFAX IN NOVA SCOTIA

TO THE

GULF OF FLORIDA.

London:

PUBLISHED BY JAMES IMRAY,

NAVIGATION WAREHOUSE AND NAVAL ACADEMY,

102, *MINORIES.*

SAILING DIRECTIONS

FOR THE COASTS OF

NOVA SCOTIA, NEW BRUNSWICK,

AND

THE UNITED STATES.

COMPILED PRINCIPALLY FROM THE SURVEYS MADE BY ORDER OF
THE BRITISH AND UNITED STATES GOVERNMENTS.

LONDON:
PUBLISHED BY JAMES IMRAY,
CHART AND NAUTICAL BOOKSELLER,
102, MINORIES.

1852.

*** COMMUNICATIONS FOR THE FUTURE IMPROVEMENT OF THIS WORK WILL BE THANKFULLY RECEIVED AND ACKNOWLEDGED.

ADDENDA.

CARYSFORT REEF.—On the 24th February, 1852, notice was issued that a fixed light would be exhibited on and after the 10th of March following, from the building recently erected on Carysfort Reef. The light is elevated 106 feet above the water, and will be visible in clear weather about 18 miles off. The building having been erected on the most seaward bank or reef, can be approached from the eastward within a quarter of a mile; its position is about 4 miles E.N.E. from the lightvessel. Page 166.

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SAILING DIRECTIONS

FOR THE COASTS OF

NOVA SCOTIA, NEW BRUNSWICK,

AND

THE UNITED STATES.

*** The Bearings and Courses are all by Compass, unless expressed thus (W.S.W.) when they must be understood as applying to the true meridian. The Soundings are all reduced to the level of low water, spring-tides. The Distances are in Nautical Miles of sixty to each degree.

It has recently been ordered by the Lords Commissioners of the Admiralty, that the word "Port" is to be substituted for the word "Larboard," in all H.M. Ships or Vessels, on account of the similarity existing between the words Starboard and Larboard, from which many mistakes have arisen.

United States.—It has been enacted, by the 6th section of the Light-house Bill, of 1850, that hereafter all buoys along the coast of the United States, or in bays, harbours, sounds, or channels, shall be coloured and numbered, so that passing up the coast or a sound, or entering a bay, harbour, or channel, red buoys with even numbers shall be passed on the starboard hand, black buoys with uneven numbers on the port hand, and buoys with red and black stripes on either hand. Buoys in channel-ways to be coloured with alternate white and black perpendicular stripes.*

CHEDABUCTO BAY TO CAPE SABLE.

CAPE CANSO is the outer, or easternmost point of St. Andrew's Island. From this cape, westward, to Torbay, the coast makes in several white heads or points; here the country is much broken; and near the S.E. extremity many white stones appear from the offing, like sheep in the woods. During a southerly gale the sea is dreadful here. From Torbay to Liscomb Harbour there are banks of red earth and beaches; and from Liscomb Harbour to the Rugged Islands, (excepting the White Isles, which are white rocks,) the capes and outer islands are bound with black slatey rocks, generally stretching out in spits from east to west; and from the Rugged Islands to Devil's Island, at the entrance of the Harbour of Halifax, there are several remarkably steep red cliffs, linked with beach.

Cranberry Island, eastward of Cape Canso, is distinguished by a lighthouse, the tower of which is of an octagonal shape, 88 feet high, and stands in lat. 45° 19′ 58½″ North, and long. 60° 55′ 40⅔″ West; it is painted red-and-white horizontally, and forms a conspicuous and useful object. It exhibits two fixed lights, one above the other.

* In the following directions, regard has not been paid to this enactment, as we believe that it has not yet been carried into effect.

Of the many rocks hereabout, the outer breaker, named the Bass, a rock of 3 feet water, lies more than 2 miles, E. ½ S., from the lighthouse on Cranberry Island; at seven-tenths of a mile, S.E., from Cape Canso is a similar rock, named the Roaring Bull; and at 1 mile to the E.S.E. of the latter, there is said to be another, but its existence is doubtful.

THE HARBOUR OF CANSO, within St. George's Island, is well sheltered, with good ground, and sufficient depth for vessels of any burthen. In a rough sea the dangers show themselves; but with smooth water it is hazardous to enter the passages without a pilot, or a leading wind.

Sailing from the westward into this harbour, so soon as you have passed the Roaring Bull, over which the sea generally breaks, run for Pitipas, or Red Head, taking care, when above the black rocks, to keep them open of the rocky islets off Cape Canso, until you bring Glasgow Head and the north end of Inner Island in one, which will carry you above Man-of-War Rock; then steer westerly, being careful to avoid Mackarel Rock, and make for Burying Island, the north end of which you must not approach nearer than to have a depth of 5 fathoms; then anchor to the north-westward of it, on a bottom of mud.

Coming from the eastward, pass between Cape Canso and Cranberry Island, giving the latter a sufficient berth, to avoid a shoal which stretches to the southward of it, and steer for Pitipas Head, as before directed. The Northern Passage between Durell's and George's Islands, notwithstanding its narrowness, yet having a depth of water and a clear channel, will be found to be the best passage. In sailing in, keep mid-channel between Bald and Nett Rocks, the former being above water, and the latter drying at one-quarter ebb; when you may steer with safety, by attending to the chart, and the situation of Burying Island. At Cape Canso it is high water, F. and C., at 8h. 50m.; tide rises from 5 to 8 feet.

DOVER BAY is a wild deep indent, with a number of islands and sunken rocks at its head; yet shelter may be found on the western shore, or during a south-east gale, by giving a berth to the rocks that lie off the south end of Big Dover Island, which are very visible in bad weather; haul up under the island, and anchor between the small islands on the eastern side: within these islands Little Dover passage continues out south-eastward, having 5, 6, and 7 fathoms water, and quite safe.

Eastward of Little Dover is St. Andrew's Passage leading to Glasgow Harbour: it is so thickly encumbered with rocks, that it can only be navigated by those who are well acquainted with its dangers.

RASPBERRY HARBOUR is to the westward of that of Canso or Port Glasgow; it is small, and the shores within quite bold. At the entrance, on the eastern side, is an island, having a ledge close to it on the S.E. By rounding this ledge, you may steer directly into the harbour, and come to an anchor under the island which lies in the middle of it, in the depth of 7 fathoms, where you will ride safely. The country here is rocky and barren, and there is a quarry of granite, much in request for mill-stones. The outlet between Raspberrry Island and the main is a complete dock, where vessels can lash themselves to both shores, and ride in 30 feet water; but half-way through, it has only 10 feet.

WHITE HAVEN, which is two leagues to the westward of Raspberry Harbour, is a place of hideous aspect. Of its rocky islets, the larger and outer one, named White Head, from the colour of its sides, is 70 feet above the sea. This islet appears round and smooth, and is a useful mark, as the passage in, on either side, is in mid-channel. Off the head are two breakers, one S.S.E. and the other E. by S., half a mile off; there is also a patch of 4 feet, lying half a mile S.S.W. ¼ W. from White Head.

TORBAY.—The entrance of this bay is formed on the west by a bold headland, named Berry Head. The channel in is between this head and the islets to the eastward. E.S.E. from the head, and south of George's Island, are three very dangerous rocks, which do not break when the sea is smooth. Within the bay, under the western peninsula, there is anchorage, in from 6 to 4 fathoms, muddy bottom, up to the eastern part of the bay. There is also anchorage on the western side of the bay, in from 7 to 3 fathoms, similar ground, where a vessel may ride in safety during any gale.

In entering, the principal dangers to be avoided are the small sunken rocks in the offing, which do not break in smooth water: they should be left to the eastward. The anchorage is excellent within the bay, on a muddy bottom, excepting a few spots of rocks, sheltered from every wind.

From Torbay, westward, to Country Harbour, the land in general continues rocky

and sterile, with deep water close in, but regular soundings without, and from 30 to 20 fathoms of water.

Coddle's Harbour, which is 2½ leagues westward of Berry Head, affords shelter to small vessels only; and these enter on the eastern side, to clear the breakers. There is a deep inlet, named New Harbour, which lies about 7 miles from the islands. This place is so much exposed, that even small vessels which occasionally resort there, in the fishing season, are under the necessity of leaving it the moment a southerly wind arises.

COUNTRY HARBOUR.—The fine harbour, named Country Harbour, is navigable, for the largest ships, 12 miles from its entrance. Vessels entering the harbour must use the utmost caution in steering between the ledges and rocks which are scattered about; fortunately they commonly show themselves whenever there happens to be any sea; this will render the entrance less difficult; but having passed the black rock, which is the innermost danger, the navigation will be perfectly safe for the largest fleet. The tide is scarcely to be perceived, except when, in spring, the ice and snow dissolve, and heavy rains are prevalent.

On advancing from the eastward, there are two rocks to be avoided, which lie, as shown on the charts; proceeding inward, you should give Green Island a small berth, and the dangers on that side will be avoided. The rocks on the west side of the entrance, named Castor and Pollux, are above water and bold-to. When above them, give Cape Mocodame a good berth, so as to avoid the Bull, a dangerous sunken rock, that breaks in rough weather, and lies about half a mile from the extremity of the cape. The black rocks are partly dry, and from them, upwards, there is no danger, and the anchorage is good. It is high water, F. and C., at 8h. 40m.; tides rise 6 to 9 feet.

The islands on the east side of the entrance to Country Harbour, (Green Island, Goose Island, and Harbour Island, or the William and Augustus Islands of Des Barres,) are low and covered with scrubby trees. Within Harbour Island is excellent anchorage.

Inland Harbour lies between Harbour Island and the main, and affords excellent anchorage on a bottom of mud; it is particularly convenient for going to sea with almost any wind.

Isaac's Harbour is on the north-east side of Country Harbour, and has good holding ground, with sufficient depth of water for any vessel. Between Isaac's Harbour and Harbour Point the ground is foul and rocky.

FISHERMAN'S HARBOUR.—In entering this place, between Cape Mocodame and the black ledge, great care must always be taken in order to avoid the Bull Rock, which dries at low water, but is covered at high water, and only breaks when the weather is bad. Bickerton Harbour, to the west of Fisherman's Harbour, is fit for small vessels only; but it is a safe, convenient, snug little harbour. At 2 miles to the west of it is Hollin's Harbour, a place of shelter for coasters, and resorted to by the fishermen. Indian Harbour is a shallow and unsafe creek, but has good lands, well clothed with pine, maple, birch, and spruce. The next inlet, named Wine Harbour, has a bar of sand, which is nearly dry.

ST. MARY'S RIVER.—The navigation of this river is impeded by a bar of 15 feet water, which extends across, at the distance of a mile and three-quarters above Gunning Point, the west point of the entrance. Below the bar, towards the western side, is a middle ground, which appears uncovered in very low tides; and, above the bar, nearly in mid-channel, is a small rocky islet. The passage over the bar is on the eastern side of this islet. The tide, which is very rapid, marks out the channel; the latter is devious, between mud-banks, extending from each shore, and dry at low water. The depths upward are from 24 to 18 feet. Sailing in, you should proceed for 4 miles N.N.W., then 2 miles N. by W.; and afterwards N.N.W. to the Fork, where it divides, the western branch terminating in a brook; the eastern branch continuing navigable a quarter of a mile farther up to the rapids. The town of Sherbrook is, at present, a small village, at the head of the river, about three leagues from the sea.

The islet, named Wedge Isle, which lies at the distance of half a league south from the S.W. point of St. Mary's River, is remarkable, and serves as an excellent guide to the harbours in the neighbourhood. A beacon, erected upon it, may be seen from 6 to 8 miles off. The beacon is of wood; its top is 140 feet high above the sea, covered at the top, and painted white. The side of this islet, towards the main land, is abrupt, and its summit is 115 feet above the sea. From its S.W. end ledges stretch outward

to the distance of half a mile; and some sunken rocks, extending towards it from the main, obstruct the passage nearly half-way over. About 2½ miles south from the Wedge is a fishing-bank, of 30 to 20 feet, the area of which is about 200 acres.

THE HARBOUR OF JEGOGAN may be readily found, on the eastward, by Wedge Isle, above described; and on the westward by the bold and high land named Redman's Head. This passage in is at the distance of a quarter of a mile from that head; because, at the distance of three-quarters of a mile is a dry ledge, named the Shag. Within the small island on the east side of the entrance, named Tobacco Isle, there is anchorage in 4 or 5 fathoms, muddy bottom.

LISCOMB HARBOUR.—The entrance of this harbour, which is one of the best on the coast, is between Liscomb Island and the headland on the west, named Smith or White Point; a mile to the northward of this is Green Point, which is bold-to. From the S.E. end of Liscomb Island, a ledge, with breakers, extends to the distance of three-quarters of a mile. Within, and under the lee of the island, is safe anchorage in from 13 to 8 fathoms. On the N.E. end of the island, a vessel caught in a S.E. gale may be sheltered by Redman's Head, already described, with the head S.S.E., in 6 and 7 fathoms, on a bottom of clay.

On the west side, the ground, from Smith Point, is a shoal to the distance of nearly a mile S.S.E.; and at 2 miles south from the point is a rock, with only 13 feet over it, and lies with Smith and Green Points in one. Another shoal of 12 feet, on which the sea breaks, lies 1¾ mile, S.S.W., from the east end of Liscomb Island; a mile within, or nearer this island, in the same direction, lies a rock. The Black Prince Rock, drying at low water, and on which the sea always breaks, lies S.E. by E. from the east end of Liscomb Island.

To enter the harbour from the southward, betweeu the 12 and 13 feet shoals, which are 1¼ mile apart, keep Green Point well open of Smith's Point, bearing N. by W. ¾ W.; when within a mile of Smith's Point, keep more to the northward, and run up in mid-channel. The island side is bold. The first direction of the harbour is nearly north, then W.N.W. Opposite to the first fish-stage, at half a mile from shore, is as good a berth as can be desired, in 7 fathoms. From this place the harbour is navigable to the distance of 4 miles: it is, however, to be observed, that there are two sunken rocks on the north side.

The coast between Liscomb and Beaver Harbours, an extent of 6 leagues, is denominated the Bay of Islands. Within this space the islets, rocks, and ledges, are innumerable: they form passages in all directions, which have, in general, a good depth of water. Near Liscomb, at the eastern part of this labyrinth, is an excellent harbour named Marie-et-Joseph, which is capable of containing a fleet of the largest ships, but requires caution to enter.

The White Islands, nearly half-way between the harbours of Beaver and Liscomb, appear of a light stone-colour, with green summits. The latter are about 60 feet above the level of the sea. The isles are bold on the south side; the passage between them safe; and there is good anchorage within them, in from 10 to 7 fathoms. From these the rocks and ledges extend 5 or 6 miles from E. to E.N.E., they are bold-to and mostly dry, the water within them being always smooth.

BEAVER HARBOUR.—The Pumpkin and Beaver Islands are very remarkable to vessels sailing along the coast, particularly Pumpkin Island, which is a lofty and dark barren rock; but they afford a smooth and excellent shelter inside of them during a southerly gale. Sutherland Island has, on its N.W. side, a deep and bold inlet, where a vessel may lie concealed, and as secure as in a dock. When in the offing, the harbour is remarkable on account of the small island which lies north of the black rock, having at its southern end a red cliff, being the only one on this part of the coast: having entered the harbour, you may choose your anchorage, according to the direction of the wind, the bottom being generally mud. The basin on the west side is so steep-to, that a small vessel may lie afloat with her side touching the beach. A stranger wishing to enter the harbour should be furnished with a pilot.

A revolving light, visible 1½ minute, and dark half a minute, is exhibited in a light-house, of a square form, which has been recently erected on the south end of the Outer Beaver, or William's Island. The lantern is 70 feet above the level of the sea, and the building is painted white, with two black balls on the seaward side, to distinguish it in the day-time. The lighthouse is situated in lat. 44° 47′ 49″ N., by meridian altitude of sun, long. chronometer 62° 25′ 18″ W., or 1° 12′ 30″ E. of the dockyard, Halifax; variation 19″ W. Bearings magnetic:—Sambro' Lighthouse, S. 84° 70′ W., 54 miles.

Canso Lighthouse, N. 81° 39′ E., 70 miles; White Islands, S. point, N. 88° E., 9½ miles; Westernmost (dry) Bird Ledge, S. 84° W., 5 miles; Harbour Rock, N. 9° W., 3 miles; and Sutherland Island, S. point, N. 18° W.

A reef extends from the east end of Beaver Island a considerable distance, so that on entering the bay you should give the lighthouse a berth of three-quarters of a mile. This harbour is a good one. Inside Beaver Island the anchorage is not very good, but farther up the bay there is a good anchorage by giving the light a berth of half or three-quarters of a mile, and steering N.N.W.

SHEET HARBOUR.—This harbour is nearly half-way between Country Harbour and Halifax. It is very extensive, but for vessels approaching in thick weather it is dangerous. Secure anchorage, on a bottom of mud, is afforded in the narrow channel between Sober Island and the main. Without the harbour are the several ledges shown on the charts: these ledges show themselves, excepting the outer one, named by the fishermen Yankee Jack, and which, when the sea is smooth, is very dangerous. It has been asserted, that a rocky shoal lies half a mile to the south of the Yankee, but its position has not been ascertained. Within the entrance is a rock, 2 feet under water, which will be avoided by keeping the Sheet Rock open of the island next within it, on the eastern side. In sailing or turning up the harbour, give the sides a very moderate berth, and you will have from 11 to 15 fathoms, good holding ground. The flood, at the entrance of Sheet Harbour, sets S.S.W. about one mile an hour. High water, F. and C., at 8h. 50m.; tides rise 7 feet.

MUSHABOON, to the westward of Sheet Harbour, is a small bay, open to the S.E., which affords shelter at its head only, in from 7 to 5 fathoms, muddy bottom. It is connected with Sheet Harbour by a clear, deep, and bold passage, between an island and the main land. Here you may lash your vessel to the trees; and, laying in 5 fathoms, soft bottom, with the side touching the cliff, be perfectly sheltered from all winds. In going through the passage to Sheet Harbour, you must guard against a sunken rock at its mouth, which, from the smoothness of the water, seldom shows its position; this rock lies 400 yards off Banbury Islands, and may easily be cleared by keeping the Sheet Rock open of the island.

SPRY HARBOUR.—Cape Spry, or Taylor's Head, divides Mushaboon from Spry, or Taylor's Harbour. On the west side of the latter are two large islands, now named Gerard's Islands. Cape Spry is destitute of trees; and, being composed of large white rocks, is distinguishable afar off. From the point of the cape, westward, is a low shingly beach, which is shoal to a distance outward of one-third of a mile. When sailing into this harbour, you will perceive the land in the centre of the harbour, appearing like three distinct hills; keep the valley between the two easternmost on with the Bald Rocks, which will lead between Mad Moll Reef and Maloney Rock. You may then steer in for the anchorage at the western head of the harbour; where a fleet may lie land-locked on a muddy bottom. The tide, at the entrance of Spry Harbour, sets in with the velocity of about one mile an hour. This harbour is open to S.E. and S.S.E. winds.

At the distance of about 3 miles, S.S.E., from Cape Spry is a dry rock, named by the fishermen the Taylor's Goose. At about midway between it and the Beaver Island lie the Shag Ledges, which are partly dry, and extend nearly a league east and west. Within and about them the depths are from 20 to 7 fathoms.

DEANE, OR POPE'S HARBOUR, on the western side of Gerard's Isles above-mentioned, has a ledge at its entrance, forming an obtuse angle at the two points, three-fourths of a mile from each, and from which a shoal extends to the southward half a mile. It may be passed on either side; but, on the west, care must be taken to avoid a shoal extending from the outer Tangier Island. The best shelter is under the smaller island on the eastern side, where there are from 8 to 6 fathoms, with good clay ground.

TANGIER HARBOUR, the next to Deane, or Pope's Harbour, is formed by craggy, barren islands, which secure vessels from all winds. At about two miles from its mouth is a ledge that dries at low water. The anchorage is under the eastern shore above Fisher's Nose, in 5 to 4 fathoms, stiff mud.

SHOAL BAY (Saunders Harbour of Des Barres).—This bay has a good depth of water and excellent anchorage, on fine white sand and strong mud. The latter is to the northward of the island now named Charles Island, and vessels lie in it, land-locked, in 7 fathoms. Off the mouth of the harbour is a rock, that always breaks; but it is bold-to, and may be passed on either side. Some parts of the harbour will admit large ships to lie afloat, alongside the shore, over a bottom of black mud.

SHIP HARBOUR is easy and safe to enter, having good anchorage in every part the bottom being a tough clay of blueish colour; it leads to Charles River, above the narrows of which a fleet of the largest ships may lie alongside of each other, without the smallest motion. The entrance, named by Des Barres Knowles' Harbour, is deep and bold: it lies between two islands, of which the eastern is Brier's, or Charles Island. A white cliff, which may be seen from a considerable distance in the offing, is a good mark for the harbour: at first it resembles a ship under sail, but on approaching seems more like a schooner's topsail. There is good anchorage in every part of the harbour.

Brier's Island, above-mentioned, is a low rugged island; and ledges, partly dry, extend from it three-fourths of a mile to the eastward: avoiding these, when entering this way, you may range along the western island, and come to an anchor under its north point, in 6 or 7 fathoms, the bottom of mud. Ship Harbour, proper, commences about 7 miles to the N.W. of Brier's Island, at a beach in the western shore, which has 6 fathoms close to its side; its entrance is one-third of a mile broad, widening as you ascend it; above Green Island are some shoals and ledges, but the anchorages below them are capacious and good.

OWL'S HEAD, OR KEPPLE HARBOUR, may be known at a distance by Owl's Head, on the western side, which appears round, abrupt, and very remarkable. The neighbouring coast and isles are rugged and barren. The entrance is of sufficient breadth to allow a large ship to turn into it; and, within the harbour, shipping lie land-locked, when in 6 and 7 fathoms, with a bottom of mud. In taking a berth you will be guided by the direction of the wind; as, with a S.W. gale, the western anchorage is to be preferred, and the eastern with a S.E. The tide sets into this harbour from the S.W., at the rate of one mile an hour. It is high water at Owl's Head at 8h. 30m.; tides rise from 5 to 7 feet.

Little Harbour is somewhat to the westward of Owl's Head Harbour, and is a place of safety for small vessels; but its entrance is intricate, and requires a good knowledge of the passages leading to it, in order to enable a vessel to enter.

JEDORE HARBOUR (Port Egmont of Des Barres).—The entrance is unsafe and intricate; a shoal of only 11 feet lies at its mouth; the channel within is narrow and winding, and there are extensive mud-flats, covered at high water, and uncovered with the ebb; hence a stranger can enter with safety only at low water, the channel being then clearly in sight, and the water sufficient for large ships. The best anchorage is abreast of the sand-beach, 2 miles within the entrance, in from 9 to 6 fathoms, on a bottom of stiff mud. Two and a half miles above the beach the harbour divides: one branch, on the port hand, is navigable nearly to its extremity, and has several sunken rocks in it; while to the starboard is a large space, with a clear bottom, and from 3 to 5 fathoms. On the eastern shore are Oyster Pond and Navy Pool, two deep inlets, but choaked at their entrance by a bed of rocks; the river terminates with a rapid. In the offing, at the distance of two leagues from the land, the body of the flood sets in S.W. by S., at the rate of half a mile an hour. It is high water at Jedore Head at 8h. 20m.; tides rise from 6 to 9 feet.

Without the entrance, on the eastern side, are two isles, named Rodger and Barren Islands, between and within which the passages are good, and afford shelter in case of necessity; from these the land runs nearly E.N.E., and forms a deep inlet, named Clam, or Clamb Bay.

The Brig Rock is a very dangerous rock, of 3 feet, and lies S.E. $\frac{1}{2}$ E. from Jedore Head, and S.W., 2 miles, from the isle named Long Island. The weed on the top of it may frequently be seen at the surface. The marks for this rock are, a house and barn in Clam Bay, just open of the east end of Long Island, bearing N. 5° E., and the house on Jedore Head open to the N.E. of Jedore Rock.

Polluck Shoal.—At about 9 miles south from Jedore Head is a reef, named the Polluck Shoal: its area is about one acre, having a depth of 24 feet over it; and, during a swell, the sea breaks on it with great violence.

Jedore Ledges.—Those advancing between the Brig Rock and Polluck Shoal should be cautious in approaching any of the Jedore Ledges, which are said to extend from 5 to 9 miles from the mouth of the harbour.

Between Jedore and Halifax there are no harbours of any consideration for shipping, but there are numerous settlements. The best harbour is that named Three-fathoms Harbour, which has occasionally received large vessels in distress. This harbour lies immediately to the east of an islet named Shut-in Island; and, with the wind on shore, is difficult and dangerous; so that it is to be attempted only in cases of real distress.

The channel lies two-thirds over to the northward from Shut-in Island, and turns short round the starboard point to the westward. When you are within this harbour the passage will be found to be clear, between banks of soft mud; but it is only fit for schooners and sloops, although it has occasionaly been visited by large vessels. The anchorage is tough blue clay. In beating to windward, ships may stand to within a mile and a half of the shore, the soundings being tolerably regular, from 20 to 12 and 8 fathoms.

In the remark book of H.M.S. Carnation, July, 1821, an account is given of a rocky shoal, which that vessel passed over, in 8 fathoms water, and upon which were taken the following bearings:—Jedore Head, N.N.W. ½ W.; west end of Long Island, N.E. by N.; and Jedore Outer Ledge, or Brig Rock, E. by S. This shoal may have less water upon it in other parts; but as these bearings do not agree with the charts, we apprehend there must be some error in its exact position. Mention is also made of a rock seen by H.M.S. Leander, June, 1787, bearing from Jedore Head S. 38° E., distant 6 miles; this has only 5 feet over it, and 22 fathoms close within and without it; this is supposed to be the Brig Rock, but if so the bearings are not correct. These two notices are inserted to show that some dangers exist hereabout, and will be sufficient to warn the mariner to search for, and cautiously avoid them.

HALIFAX HARBOUR is one of the finest in British America. It is easy of approach and accessible at all seasons, and is said to be large enough to accommodate any number of vessels in perfect security. Its direction is nearly north and south, and its length about 16 miles. Its upper part, known by the name of Bedford Basin, is a beautiful sheet of water, containing about 10 square miles of good anchorage. The town of Halifax, in lat. 44° 39′ N., and long. 63° 37′ W., is the capital of Nova Scotia, and contains 15,000 inhabitants.

The land about the Harbour of Halifax, and a little to the southward of it, is in appearance rugged and rocky, and has on it, in several places, scrubby withered wood. Although it seems bold, it is not high, being only to been seen from the quarter-deck of a 74 gun-ship at 7 leagues distance; excepting, however, the high lands of Le Have and Aspotogon, which have been seen 9 leagues off. When Aspotogon highland, which has a long level appearance, bears North, and you are 6 leagues distant, an E.N.E. course will carry to Sambro' Lighthouse, which stands on Sambro' Island.

Sambro' Lighthouse exhibits a brilliant fixed light at 132 feet above the sea, visible 20 to 25 miles. Two 24-pounders are placed on Sambro' Island, under the direction of a small party of artillery-men, which are fired on the approach of vessels, and contribute much to the mariner's safety by warning him off the adjacent breakers.

On the eastern side of the channel lies M'Nab's or Cornwallis' Island, which is nearly 3 miles in length and 1 in breadth. There is a small island to the eastward of in, named Caroll's Island; boats can pass this way, or between it and the Devil's Island shore, in what is commonly named the S.E. Passage, but the channel is too narrow for shipping; and it is further obstructed by a bar of sand to the southward, over which are only 8 feet water. From the western side of M'Nab's Island proceeds a spit of gravel, named Mauger's Beach, on which is now a lighthouse intended for leading vessels up the harbour. The light is of a red colour, and is elevated 58 feet above the level of the sea. Northward of Mauger's Beach, in M'Nab's Cove, is good anchorage in from 9 to 4 fathoms, muddy bottom; the best spot is in 7 fathoms, with Mauger's Beach and Sandwich Point locked; George's Tower touching Ives Point.

The promontory, named Chebucto Head, bounds the entrance of the harbour on the west. At 3½ miles above this head, on the western side of the harbour is Herring Cove, where small vessels lie perfectly sheltered in shoal water. The coast between this and Chebucto is wholly of rock.

S. by E., at the distance of 2 full miles from Sambro' Lighthouse is Henercy Rock, with 8 feet over it; and to the E.N.E., at the distance of a mile, from the Henercy, lies the Lockwood, of 12 feet. Both are, of course, exceedingly dangerous to those approaching within a short distance.

The Ledges.—Within and about two miles from Sambro' Lighthouse there are several dangers known under the names of the Eastern and Western Ledges.

Of the Western Ledges the Bull is the westernmost, and is a rock above water, lying about two-thirds of a mile S.E. by E. from Pendant Point, with the lighthouse bearing from it E. 7° S. To the south-eastward of the Bull, at the distance of a mile, lies the ledge named the Horses, with the lighthouse bearing E. by N., 1¾ mile distant. The S.W. Rock, or Ledge, lies with the lighthouse bearing N.E., 1½ mile.

Great caution is requisite to avoid those dangers, although deep water surrounds them; there being 10 fathoms and a clear passage between the Bull and the main, 11 fathoms with no intermediate danger between the Horses and the Bull, and 20 fathoms between the Horses and the S.W. Rock.

The Owen Rock, so named from its discoverer Captain Owen, of H.M. steam-vessel Colombia, lies with Sambro' Lighthouse S.W., distant one and three-fifths of a mile. Captain Owen in his report says:—"The Colombia touched on a sunken rock or ledge without entirely losing her way, so that there must have been at least 12 feet water on the part she touched, (her draught being 12½ feet); just before the vessel touched there were 11 fathoms, 8 fathoms at the time at the starboard paddle-box, and 18 fathoms at the port paddle-box."

The Eastern Ledges are the Sisters, or Black Rocks, which lie nearly E. by S. from the lighthouse, distant two-thirds of a mile. There is also the Bell, a rock of 18 feet, lying at a quarter of a mile from shore, with the extremity of Chebucto Head N. by E. ½ E., distant three-quarters of a mile.

Within the line of Chebucto Head on the S.W. and Devil's Island on the N.E., are several rocks and ledges. Of these the first is Rock Head, which lies with Chebucto Head S.W. by W., 2¼ miles, and Devil's Island N.E. ½ E., about the same distance. The second is the Thrum Cap, a reef which extends from the south end of M'Nab's or Cornwallis' Island. The next is the Lichfield Rock, which lies towards the western side of the harbour, and has only 16 feet over it. At a mile above the Lichfield Rock on the same side is the Mars Rock, lying with Point Sandwich bearing North half a mile, and nearly in a line with it and the west side of George Island. A reef, named the Horse-Shoe, extends from Mauger's Beach on the west side of M'Nab's Island. It is dangerous, and must be carefully avoided. There is a floating beacon, with a cask at the top, upon Rock Head; it lies with George's Island Tower in one with Ives Point, and Sambro' Lighthouse just seen over Chebucto Head. A beacon of wood 50 feet high and painted white is erected on Devil's Island, on the east side of the entrance. There is a beacon-buoy on Thrum Cap Reef, which lies with George's Island open of Ives Point. When going into the harbour the above three beacons and Mauger's lighthouse are to be kept on the starboard side. On the Lichfield and Mars Rocks there are also flag-beacons which are to be left on your port hand going in: the leading mark in, between these beacons, is the flag-staff on Citadel Hill open of Point Sandwich.

Half-way between Mauger's Beach and George's Island, on the opposite side is a shoal, extending to the S.E. from Point Pleasant, nearly one-third of the channel over, and having a buoy on its extremity. The thwart-mark for this buoy is a little islet at the entrance of the N.W. arm, on with a remarkable stone upon the hill, appearing like a coach-box, and bearing W.S.W.

Between Mauger's Beach and Point Pleasant Shoal there is a middle ground, of 4½ and 5 fathoms, sometimes pointed out by a buoy. This middle ground extends north and south a cable's length, and is about 30 fathoms broad: as you fall off to the eastward of it you will have from 7 to 13 fathoms water, muddy bottom; while on the west side there are from 10 to 14 fathoms, coarse and rocky bottom.

Reid's Rock, having 12 feet over it, lies in-shore, about half-way between Point Pleasant and Halifax. The thwart-mark for it is a farm-house in the wood over a black rock on the shore, bearing W. by S. Opposite to Reid's Rock is a buoy on the spit, extending from the N.W. end of M'Nab's Island.

In sailing into Halifax Harbour from the westward, advance to the eastward so as to pass the lighthouse at the distance of a league, taking care not to approach too near to the Henercy or Lockwood Rocks before-mentioned. When the lighthouse bears N.N.W. ¾ W. you will be in a line with the Henercy Rock, and with it N.W. ¾ W. in a line with the Lockwood. With the lighthouse W.N.W. you will be clear to the northward of both, and may proceed N. by E., 4 miles; which brings you off Chebucto Head. Here you will bring the leading mark on, which is the flag-staves on Citadel Hill open of Point Sandwich, and bearing N. by W.; and, by keeping them thus open, you will pass clear of the Lichfield and Mars Rocks on the west, as well as of the Rock Head and Thrum Cap on the east. When nearly up to Sandwich Point, which is bold-to, keep Chebucto Head well in sight, without that point; and this direction, kept on, will lead in the fairway up to George's Island, leaving Point Pleasant Shoal on the left, and the Horse-Shoe, or Reef of M'Nab's Island, on the right. Or, *when abreast of Chebucto Head*, or when Sambro' light bears W.S.W., the light

on Manger's Beach should never be brought to the westward of north. Keeping the light from north to N. by E. will lead clear of the Thrum Cap Shoal, from the buoy on which the lighthouse bears N. ¼ W. *Those advaneing from the westward* will see the light on Mauger's Beach, when they are as far to the westward as Chebucto Head, by keeping it well open on the starboard bow; it will then lead them up to the beach.

George Island may be passed on either side, and you may choose your anchorage at pleasure, in from 13 to 6 fathoms, muddy bottom. From George Island to the head of Bedford Basin there is no obstruction to shipping.

Ships of war usually anchor off the Naval Yard, which may be distinguished at a distance by the masting sheers. Merchant-vessels discharge and take in their cargoes at the town-wharves.

Small vessels, from the eastward, occasionally proceed to Halifax by the S.E passage, within M'Nab's Island. On the shoalest part of the bar of sand, which obstructs this passage, there are, however, but 8 feet at low water. Above the bar the depth increases to 5 and 10 fathoms, bottom of mud.

In sailing into Halifax Harbour from the eastward, especially with an easterly wind, observe that the Thrum Cap and Rock Head must be carefully avoided. In proceeding this way, steer West, W.N.W., or N.W., according to the wind and your distance from the shoals, until George Island, up the harbour, is open a sail's breadth to the westward of M'Nab's Island; then haul up for Sandwich Point and York Redoubt, until you see the steeple of St. Paul's Church, in Halfax, a ship's length open to the eastward of Judge Brenton's House, a remarkable one, fronting the south. This mark, kept on, will lead clear of Point Pleasant Shoal, and in a fairway between Mauger's Beach and Sandwich Point; whence you may steer directly for George Island, and pass in on the east side, if the wind will permit.

In turning to windward, give the upper or inner part of Mauger's Beach a berth of one cable's length, in order to avoid the Horse-Shoe Reef, thatruns from the north part of the beach to the distance of one cable and a half's length. You may stand to the Sandwich Point side to within two ships' length, that being bold-to; but stand no farther over to the westward, to avoid Point Pleasant Shoal, than keeping St. Paul's Church open to the eastward of Judge Brenton's House, on the south shore, as above-mentioned.

When arrived thus far, put in stays; and, standing to the eastward, keep Little Thrum Cap Island, (now Caroll's) a red bluff, open of M'Nab's Island: having this mark on, put in stays again, and you will thus go clear of the N.W. spit of M'Nab's Island.*

The little harbour, or cove, named Catch Harbour, to the westward of Chebucto Head, has a bar across the entrance, with 9 feet over it at low water, upon which the sea breaks when the the wind blows on shore. Within it are 3 and 3½ fathoms. It is frequented by small vessels only.

On the coast from Halifax, westward, to Margaret's Bay, the country appears, from the offing, very rocky with numerous inlets, the shore being steep-to, and bounded with white rocky cliffs. The high lands of Aspotogon, on the east side of Mahone Bay, are very remarkable; and proceeding eastward from Mahone Bay the rocks which surround the shore are black, with some banks of red earth. Between Cape Le Have (which is a remarkable promontory, 107 feet above the sea, bald on the top, with a red bank under it, facing the south-westward) and Port Medway, there are some hummocks inland, about which the country appears low and level from the sea; and, on the shore, white rock and stony beaches, with several low bald points: hence to Shelburne Harbour the land is woody. About the entrance of Port

* There is great difficulty in making Halifax from the eastward, particularly in the winter season, in consequence of the winds being too frequently from the W.S W. to N.W., and blowing so hard as to reduce a ship to very low canvas, if not to bare poles, and should the wind come to the eastward, it is invariably attended with such thick weather as to prevent an observation, or seeing to any great distance; hence, under such circumstances, it would be imprudent to run for the shore, more particularly in winter, when the easterly winds are attended with sleet and snow, which lodge about the masts, sails, rigging, and every part of the ship, becoming a solid body of ice so soon as the wind shifts round to the N.W., which it does suddenly from the eastward. These are circumstances of real difficulty; and it has been recommended, in such a case, to run far to the south-westward, (avoiding the Gulf Stream,) and thence from the S.W. coast, to keep the shere on board, all the way to Halifax.

Latour, and within land, are several barren spots, which, from the offing, are easily discerned; thence, to Cape Sable, the land appears level and low, and on the shore are some cliffs of exceedingly white sand, particularly in the entrance of Port Latour, and on Cape Sable, where they are very conspicuous from sea.

Mr Davy, R.N., of H.M.S. Cornwallis, made the following remarks while proceeding from Halifax to Quebec. The Cornwallis left Halifax on June 4th, 1838.

"Wind north with fine weather, sailed with Pearl, Dee, and Charybdis for the Gut of Canso. Passed out between the Thrum Cap and Rock Head Shoals to within a cable's length of the Thrum Cap Buoy, having 10 fathoms water. This channel is quite safe. Being thus clear, 27 miles led us to the southward of the Jedore Shoals; then east for White Head, wind and weather looking favorable. Just to the eastward of Cold Harbour is a remarkable red cliff, making in a well-formed saddle; the red is bright, and the eastern coast, thereby, is easily recognised; while the coast to the westward of Halifax is known by its white cliffs. It is advisable for strangers running from Jedore to Canso, not to approach the coast nearer than 10 miles, until abreast of Torbay. This is a spacious bay, having Berry Head at its western point and Cape Martingo at its eastern, 5 miles apart. White Head Island, immediately to the eastward of Torbay, is the most remarkable land on the coast, and is as a beacon to the pilots; it stands well out, and from the westward terminates the eastern view. Being 10 miles south of it, steer N.E. by E. for Canso lighthouse, which is a tall white building, and makes well out to seaward, on a small, low island, named Cranberry Island. It exhibits good fixed lights,* which must be brought to bear west before keeping away; then steer N.N. W., until George Island bears West, thence N.W. and N.N.W. for Cape Argos. Avoiding the Cerberus Shoal, which is very dangerous, and directly in the track, leave it on your port hand. Cape Argos makes like a round island, and is bold to approach; passing this, the distance across the gut becomes narrowed to $1\frac{1}{2}$ mile."—*Naut. Mag.*, 1839, p. 299.

SAMBRO' HARBOUR.—This harbour lies at $1\frac{3}{4}$ mile to the N.N.W. of the Lighthouse Island. The Bull Rock, already noticed, lies off its entrance, and there are two other rocks between the latter and Sambro' Island. The best channel into it is, therefore, between Pendant Point and the Bull Rock; but vessels from the eastward may run up between Sambro' Island and the Inner Rock. An islet, named the Isle of Man, lies within the entrance, and must be left, when sailing inward, on the left, or port hand. The anchorage is above this islet, in 3 fathoms, muddy bottom. This place is, generally, the resort of coasters in bad weather.

The passage between the rocks and ledges lying to the southward of Sambro' Harbour may oftentimes conduce to the safety of vessels making the land by mistake so far to the westward of the light, as to be unable to clear the dangers southward of it, but should be attempted only in cases of emergency; the depth of water is sufficient for the largest ships, but great prudence is required.

PENDANT HARBOUR (named Port Affleck by Des Barres,) is situated round the point to the westward of Port Sambro', but although it possesses good anchoroge, it is but little frequented. The islands on the western side of it are bold-to, the ground is good, and the depth of water is generally from 5 to 10 fathoms. It is extensive and safe in bad weather, and the dangers are all visible. At its further end there is an inlet named Dagge Cove.

TENANT BAY, (or Bristol Bay,) between Pendant Harbour and Tenant Basin (Shuldham Harbour of Des Barres), is obstructed by several rocks and islets, but, once gained, it is extensive and safe; and in bad weather, the dangers show themselves. There is anchorage in 9 fathoms, ground a tough clay. When entering, the land presents, to the eye of a stranger, the rudest features of nature. It is high water, F. and C., at 7h. 45m., and the tides rise about 8 feet.

PROSPECT HARBOUR is situated about $2\frac{3}{4}$ miles to the westward of Tenant Bay, from which it is separated by a large cluster of islands and broken land, the outer extremity of which is named Cape Prospect, or Mars' Head. On approaching, Prospect Harbour presents a rugged broken appearance, but it is safe and extensive, and in rough weather the dangers mostly show themselves. Vessels coming from the eastward and rounding Cape Prospect, must beware of a rock with 17 feet over it; it lies south, about one-third of a mile from the cape; go not between it and the cape, but proceed on its southern side in 20 and 21 fathoms water, and by keeping more than

* See above, page 1.

half a mile from the land you will steer quite clear of danger, and may sail boldly up its eastern channel between Prospect and Betsey's Islands; having passed these, the channel narrows: the western passage is between Hobson's Nose and Dorman's Rock. There is good anchorage for large ships above Pyramid Island, and also for small vessels, within Betsey's Island, in 4½ fathoms, blue stiff clay. There is a breaker, with 3 fathoms over it, at the distance of two cable's length to the eastward of Dorman's Rock.

SHAG HARBOUR, (Leith Harbour of Des Barres,) is the next westward of Prospect Harbour, and is the N.E. arm of an inlet, of which the N.W. arm is Blind Bay, in both of which excellent anchorage may be found. The Hog, a sunken rock, lies in the common entrance without, and has only 6 feet of water over it; it bears S.E. ½ E., nearly 1½ mile, from Taylor's Island (Inchkeith). In rough weather, with the wind on shore, the sea breaks over it; and, in fair weather, it may be perceived by the rippling of the tide. There is a good channel on either side: that on the west side is the most difficult, there being a ledge extending half a mile towards it, E.S.E., from the eastern extremity of Taylor's Island.

DOVER PORT lies on the western side of the entrance to Blind Bay: it is formed by Taylor's Island and several other islands, and affords good and safe anchorage. The eastern passage is the best, and when sailing in, give a berth to the reef, which extends S.E., half a mile, from Taylor's Island. The anchorage is within the body of Taylor's Island, in 10, 9, or 7 fathoms, muddy bottom. The western entrance has numerous sunken rocks in it, and the water being shallow it should not be attempted.

The coasts, between the Harbour of Halifax and this place, are craggy, broken, and barren; the shore is iron-bound and steep, and a tree is scarcely to be seen. Fish, however, are abundant, and the harbours are most conveniently situated for the fishery.

Margaret's Bay is about 25 miles in circumference, 9 miles in length, and 2 miles in width at the entrance. In this beautiful sheet of water are harbours capable of receiving ships of the line, even against the sides of the shore. To the west of the entrance stands the high land of Aspotogon, the summit of which, bearing N.W., leads directly to the mouth of the bay. The shores at the entrance are high white rocks, and steep-to. On the western side is a narrow islet, named South-west or Holderness Isle, a body of rock about 50 feet in height, and bold-to on all sides. At nearly half a mile, E. by N., from Holderness Isle, is a rock having 4 fathoms over it, on which the sea breaks in rough weather; but it can hardly be deemed a danger.

A rock, uncovered at low water, lies on the eastern side of the entrance, at about 300 yards from East Point; and there is, at 1½ mile south from South-west Isle, a ledge named the Horse-Shoe, almost covered and surrounded with breakers, and which bears from the south point of Taylor's Island, W. by N., 4¾ miles: the depths around it are 6 and 8 fathoms; and between it and the South-west Island there are 12, 14, 26, 34, and 30 fathoms.

About 2¼ miles to the northward of East or May Point, on the eastern side of the bay, is Peggy's Point, and at a mile beyond this is Shut-in Island, 208 feet high, covered with wood, and bold-to; but there are two ledges between it and the inner part of Peggy's Point, over which the depths are 8 and 9 feet. In a southerly gale the water is smooth on the lee side of the island, and the bottom good. At 1½ mile, N.E. ½ N., from Shut-in Island, is a smaller isle, named Luke's, forming a complete break to the sea, and used as a sheepfold. There is good anchorage on the N.E. side of it, smooth in all seasons; and this, therefore, is a usual place of shelter. Within two miles northward of Luke's Isle are the Strelitz Isles of Des Barres, but the principal of which are now named Jollimore's Isles. A reef extends north-eastward from the latter, and the land within forms the harbour named Hertford Basin, wherein the depths are from 7 to 10 fathoms, and the anchorage is safe under the lee of Jollimore's Isles.

Head Harbour, or Delaware River, situated in the N.E. corner of the bay, is an excellent anchorage, and so safe a place that a fleet might be securely moored in it side by side, and unaffected even by a hurricane. The lands are high and broken, and Moser Islands, at the entrance, are used as sheepfolds.

Hubbert's Cove, the Fitzroy River of Des Barres, is situated in the N.W. corner of the bay, and may be entered by a stranger, by keeping the western shore on board; and a ship dismasted or in distress may here find shelter. If without anchors, she may safely run aground, and will be assisted by the settlers. At the entrance of the

cove, towards the eastern side, is a ridge of rocks named Hubbert's Ledge (Black Ledge) which is about 100 fathoms in extent, and covered at high water: it may be passed on either side, keeping the land on board, the shores being bold.

Long Cove (Egremont Cove) is $2\frac{1}{2}$ miles to the southward of Hubbert's Cove, and affords good anchorage with a westerly wind: to the southward of Long Cove the coast is bold and rugged, without any danger, except a small rock, of 6 feet water, which lies close in to the land.

North-west Harbour is situated about a league to the southward of Long Cove, and its entrance is divided into two channels by Horse Island. On either side of the island there is a good passage with 10 fathoms water; and good anchorage, adapted for small vessels, may be obtained behind it, in from 6 to 9 fathoms, or farther up, in 5, 4, or 3 fathoms. The south point of entrance to North-west Bay is formed by Owl's Head, which is an abrupt precipice.

South-west or Holderness Isle, before-mentioned, is a body of rock about 50 feet in height, and bold-to on all sides. There is a small spot, of 3 fathoms water, directly to the northward of the northern part of the South-west Isle, and to the north-westward of the island is what is commonly named the South-west Harbour, formed between Owl's Head, which is literally a rocky island, separated from the main by a very narrow passage, not even navigable for boats. Here are 5, 6, and 7 fathoms water; but the place is seldom frequented.

Vessels sailing from the eastward, bound for Margaret's Bay, usually go in between the Horse Shoe and East Point. A northerly course will carry you midway between them, right up to the head of the bay, without encountering any danger, except those already described.

Aspotogon Harbour lies to the westward of South-west Island, but it is too shallow for ships. At its entrance are Black, Saddle, and Gravelly Islands and Shoals; to the southward of these is Seal Ledge, shallow and dangerous, which lies W. $\frac{1}{2}$ N., $2\frac{3}{4}$ miles, from the Horse Shoe, and W.S.W., nearly 3 miles, from the southern part of South-west Island.

At the distance of 5 miles, W.S.W. $\frac{1}{2}$ S., from the south point of South-west Island, is Iron-bound Island, which is about a mile long, narrow, and steep-to. It lies S.S.E. $\frac{1}{2}$ S., $1\frac{1}{2}$ mile, from the extremity of the peninsula which divides Margaret's and Mahone Bays, and is named New Harbour Point; between which is a good channel, with from 6 to 17 fathoms water, the ground being chiefly a black mud.

Green Island, which is small, lies S. $\frac{1}{2}$ E., 3 miles, from Iron-bound Island, S.W. by S., 7 miles, from South-west Island, W.S.W., 9 miles, from Taylor's Island, and W.NW. $\frac{3}{4}$ W. from abreast of Sambro' Lighthouse. There is said to be a shoal, of only 2 fathoms, midway between Iron-bound and Green Islands, but its exact position is not accurately known, and therefore it is omitted in the charts. The probable existence of such a danger ought to be guarded against; there is otherwise water sufficiently deep for any vessel.

MAHONE BAY is divided from Margaret's Bay by the peninsula, on which stand the high lands of Aspotogon, whose appearance in three regular swellings is very remarkable at a great distance in the offing. This bay extends nearly 4 leagues from N.E. to S.W., and contains numerous islands and rocks, the largest of which, Great and Little Tancook, are on the eastern side. Green Island, above-mentioned, lies without the entrance; another small isle, named Duck Isle, is situated on the opposite side; and a larger, named Cross Island, is situated more to the west. There is a channel, one mile in breadth, between the two latter.

The Outer Ledge, which always breaks, lies N.E. $\frac{1}{2}$ E., $1\frac{2}{3}$ miles, from the east end of Duck Island, and W. $\frac{1}{2}$ N., 3 miles, from the west point of Green Island. The Bull Rock is another danger lying at a mile to the southward of Great Tancook, and bears from Green Island N.W. $\frac{1}{2}$ W., $4\frac{1}{2}$ miles; from the east end of Duck Island N. $\frac{2}{3}$ E., 4 miles: this rock is visible at at one-third ebb, and from it the S.W. end of Flat Island bears E. by N., 1200 fathoms distant, and the west point of Tancook Island N. by W., $1\frac{3}{4}$ mile distant. Further up, N.W. by W., 400 fathoms distant from the west point of Tancook Island, lies Rocky Shoal, within which and Tancook Island is deep water. At $1\frac{1}{4}$ mile north of Great Tancook is a blind ledge, named the Coachman, which is visible at low water only. The east ends of Great Tancook and Flat Island in one will lead you clear on the east side of this ledge, and the west end of Iron-bound Island open with the west point of Little Tancook will lead you clear to the southward; and Governess Island on with the west point, carries you safe on its north side.

Chester Town is situated at the head of the bay, and is surrounded by a country of fertile appearance and abounding in wood. To sail into Malone Bay from the eastward, the first land seen will be Green Island, which is round, bold, and moderately high. Hence to Ironbound and Flat Islands, both steep-to, the distance is about 3 miles; passing these you proceed to and between the Tancook Islands, which are inhabited: the passage is good, and there is anchorage, under the isles, in from 12 to 7 fathoms. On proceeding towards Chester, the only danger is the ledge named the Coachman, above-mentioned. Chester Church open, on the west of Great Tancook, leads clear to the westward of the Bull Rock, and down to Duck Island. The islands off the town render the water in the harbour smooth and pleasant; the depth is from 5 to 2 fathoms.

It is high water, F. and C., in Margaret's and Mahone Bays at 8h.; and the vertical rise is from 7 to 8 feet.

LUNENBURG BAY, named also *Malaguash*, is a place of considerable trade, and the harbour is easy of access, with anchorage to its head.

Cross Island, 30 feet high, lies at the entrance of the bay, and is in a state of cultivation; and on its N.E. side is a nook, where coasters may lie securely. The Hounds Rocks lie off this part, which must have a berth in passing: the west and south sides of the island are bold, and there is an excellent fishing-bank at 2 miles from its southern end, with from 14 to 17 fathoms water. On the S.E. point of the island is erected a light-house, in lat. 44° 19′ N., and long. 64° 9′ W., at the entrance of Lunenburg Bay. The tower is of an octagonal shape, painted red, with two lights placed vertically, and 30 feet apart. The lower light is fixed, and the upper one flashes at intervals of a minute. The lantern is painted black.

In sailing in, you may pass on either side of Cross Island; but the channel on the west side of the island is the best. In sailing through the northern channel, be careful to avoid the shoals which extend from the north side of the island, and from Colesworth Point on the opposite side. In sailing in through the channel to the westward of the island, steer midway between it and Rose Point: and, before you approach the next point, which is Ovens' Point, give it a berth of two or three cables' length; for, around Ovens' Point is a shoal, to which you must not approach nearer than in 7 fathoms. From Ovens' Point N.E., three-quarters of a mile distant, lies the Sculpin or Cat Rock, dry at low water. Your leading-mark, between Ovens' Point and the Cat Rock, is a waggon-roadway (above the town of Lunenburg), open to the westward of Battery Point, which mark will keep you clear of a rock of 4 fathoms at low water. The best anchoring ground is on the west shore, opposite the middle farm-house, in 7 fathoms, muddy bottom. Your course in is from N.N.W. to N.W. by N. In this bay, with good ground tackling, you may ride out a S.E. gale very safely. The harbour, which is to the northward of the Long Rock and Battery Point, is fit only for small ships of war and merchant vessels. Along the wharves are 12 and 13 feet of water, and, at a short distance, from 20 to 24 feet, soft mud.

It is high water, F. and C., at 8h.; and the tides rise from 6 to 8 feet.

Dartmouth Bay is situated between Ovens' and Rose Points, and has some settlements about the shores, and on an island at the bottom of the bay. It is easy of entrance, and you may anchor abreast of this island, in 3, 4, 6, or 7 fathoms. In sailing into this bay, it will be always advisable to borrow somewhat towards the Rose Point shore, because of the shoals which lie to the southward of the Ovens' Point; there is otherwise no danger whatever.

Between Lunenburg and Iron-bound Island, at the entrance of Le Have River, the shores are bold, and much indented with irregular inlets or bays. Iron-bound Island lies about W.S.W. ¼ S., distant nearly two leagues from Cross Island; it is inhabited, and some small rocky islets surround its northern shore. S.E. ½ E., 1½ mile, from this island, is a bank of 20 and 25 fathoms: and W.S.W., three-quarters of a mile, from that, is a small spot of 15 fathoms: these have from 30 to 40 fathoms about them.

LE HAVE.—Ships coming from the south-eastward for Le Have River, will not fail to discover Cape Le Have (formerly described, p. 9), and which is situated about 12 leagues, W. ¾ S., from Sambro' Lighthouse. At the distance of a mile, S.E. by S., from this cape lies the Black or Le Have Rock, 10 feet high, and 100 feet long, with deep water around it, and 9 to 11 fathoms between it and the shore, except on a small knoll, lying off and opposite to the cape, over which are only 4 fathoms. At 3½ miles, W. by S., from the cape is Indian Island; and several islands lie to the northward of the cape, with passages between them; but the best entrance to the River Le

Have is to the northward of them all. There is a good channel to the northward of Iron-bound Island, but it is narrow, and to navigate this you must give the Iron-bound Island a good berth; you will then have from 12 to 4 fathoms water all through it; but the best passage is to the westward of the island, which is above $1\frac{1}{2}$ mile broad, and has from 10 to 14 fathoms water within it. About 3 miles to the north-westward of Iron-bound Island is a bar, which runs across from shore to shore; over this are 12 and 15 feet, the deepest water being one-third across from the eastern shore. The soundings from Iron-bound Island towards the bar are 11, 14, 12, 9, 7, 6, 5, 4, and 3 fathoms, the latter depth being close to the edge of the bar; but when you are well over that, you drop into 4, 5, and 6 fathoms, the river continuing navigable 12 miles up, or as far as the falls; the general width of the river is half a mile, and when you are 8 miles up it, you will meet with the road from Lunenburg to Liverpool, where a ferry is established. There are several settlements on the banks of this river; and the whole wear a face of improvement and cultivation.

Within and to the westward of Cape Le Have is Palmerston Bay; at the head of this is Petite Riviere, a settlement formed by the French, the farms of which are in excellent condition. Off the eastern entrance of this bay lies Indian Island, bearing W. by S., distant $3\frac{1}{2}$ miles, from Cape Le Have. It is high water, F. and C., at Cape Le Have at 8h., and the tides rise from 5 to 7 feet.

PORT MEDWAY, or JACKSON.—The entrance may be known by a hill on Medway Head, and a long range of low rugged islands extending true South, forming its eastern side. It is seven-eighths of a mile broad, and has a depth of 10 to 4 fathoms. The land to the eastward of the harbour is remarkably broken and hilly. The South-west Ledge, or outer breaker, on the starboard side, without the entrance, lies S.E. $\frac{1}{4}$ S., about $1\frac{1}{2}$ mile, from Medway Head. The Stone Horse, a rock dry at low water, lies E. by S., one-third of a mile, from the South-west Breaker. When approaching from the eastward, you will avoid the South-west Ledge, on which the sea breaks in rough weather, by keeping the lighthouse on Coffin's Island open of the land to the eatsward of it. The course up the harbour is N. $\frac{1}{2}$ E. and W.N.W.

LIVERPOOL BAY.—This bay has room sufficient for turning to windward, and affords good anchorage for large ships, with an off-shore wind. The deepest water is on the western shore. Western Head. or Bald Head, at the entrance, is bold-to and is remarkable, having no trees on it. Herring Cove, on the north-east side of the bay, affords good shelter from sea winds, in 3 fathoms, muddy bottom; but it is much exposed to a heavy swell, and has not room for more than two sloops-of-war. At high water, vessels of two and three hundred tons may run up over the bar into the harbour; but at low water there are only 10 feet over it. The channel, within, winds with the southern shore, and the settlements of Liverpool upward.

The entrance bears about W. by S., $17\frac{1}{2}$ leagues, from Sambro' Lighthouse, and W.S.W. $\frac{1}{4}$ W., $5\frac{1}{2}$ leagues, from Cape Le Have. Before it lies Coffin's Island, which is now distinguished by a lighthouse, 90 feet high, having a revolving light, which appears full at intervals of 2 minutes. The land in the vicinity of the harbour is generally rocky and barren, yet the commercial spirit of the people has raised the town of Liverpool to respectability and opulence, and they trade to every part of the West Indies.

In Port Medway and Liverpool Bay it is high water, F. and C., at 7h. 50m., and the vertical rise is from 5 to 8 feet.

PORT MOUTON, or MATOON, named by Des Barres, Gambier Harbour.—This port is formed by the Island Mouton which lies at the entrance, and therefore forms two channels. The channel on the western side of the island is so impeded by islets and shoals as to leave a small passage only for small vessels, and that close to the main. In the eastern passage lies a rocky ridge, named the Portsmouth or Brazil Rocks, about one mile to the eastward of the island; and from the N.W. end of the island a shoal extends to the distance of more than a mile. Within Mouton Island, on the W.N.W., are two islands, named the Spectacles, or Saddle. On both sides of the Portsmouth Rocks (which are always above water) you have deep channels, and of a sufficient width for ships to turn into the harbour. With a leading wind you may steer up W.N.W. $\frac{1}{2}$ W., until you bring the Saddle to bear S.W. $\frac{1}{4}$ W., and haul up S.W. by W. to the anchoring ground, where will be found from 20 to 12 fathoms, muddy bottom, in security from all winds.

An islet, named Little Hope Island, is situated at 5 miles, S.S.W. $\frac{1}{4}$ W., from the south end of Mouton Island. It is 21 feet high, and 200 fathoms in length, and is situated

at 2¼ miles from the shore, and is surrounded by a shoal. This is a very great danger, and should have a beacon to distinguish it.

The next harbour, west of Little Hope Island, is Port Jolie (Stormont River of Des Barres, and Little Port Jolie of others), extending 5 miles inland, but it is altogether very shoal, and has scarcely sufficient water for large boats. Between this harbour and Little Hope Island are several ledges, which show themselves, and there is a shoal spot nearly midway between the island and the main.

PORT EBERT, or GREAT PORT JOLIE, may readily be known by the steep and abrupt appearance of its western head; and also by Green Island, which lies to the south-westward of its entrance. This island is somewhat remarkable, being destitute of trees. The only anchorage here, for large vessels, is in the mouth of the harbour; and the channel leading to it is not more than 60 fathoms wide, between Bridge's Rocks and Stony Beach. Above are flats, with narrow winding channels through the mud.

SABLE RIVER lies to the south-westward of Port Ebert, distant 5 miles. At its entrance, nearly midway of the channel, is a rocky islet, which lies S.W. by W. from Green Island, distant 3½ miles, and has a passage on either side of it: that to the eastward has 12, 13, and 15 fathoms water, but that to the westward is somewhat shallower. The two points of entrance of the river are distant from each other 1¼ mile, with from 6 to 11 fathoms; but there is a bar, which renders this place totally unfit for affording shelter to any but the smallest class of vessels.

RUGGED ISLAND HARBOUR seems to have been so named from its craggy and rugged appearance, and the numerous dangerous ledges and sunken rocks at its entrance. This place is seldom resorted to, unless by the fishermen, on account of the difficulty of access, although, within, the anchorage is good, in 4½ and 4 fathoms. In a gale of wind, the uneven rocky ground at the entrance causes the sea to break from side to side. At a mile from the western head is a bed of rocks, named the Gull, over which the sea always breaks. Thomas' or Rugged Island, to the east of the harbour, affords a good mark for it, this island having high rocky cliffs on its eastern side. From its southern point sunken rocks extend to the S.W. nearly a mile, and within these is the Tiger, a rock of only 4 feet, lying South, half a mile, from Rug Point, the eastern point of the harbour. Having cleared these on the outside, haul up N.N.W. for the islands on the left or western side, and so as to avoid a shoal which stretches half-way over from the opposite side. Pursuing this direction, you may proceed to the anchorage in the north arm of the harbour.

To the westward of Rugged Island Harbour lies Green Harbour, having an island on the western side of the entrance, and running in full 3 miles: this and the River Jordan, situated still farther to the westward, appear to be places where good anchorages may be obtained, but they are at present little frequented by shipping, although they have many inhabitants. They are open to southerly winds, which cause a heavy rolling sea.

SHELBURNE HARBOUR, or Port Roseway.—Cape Roseway, the S.E. point of Roseneath or Macnutt's Island, is a high cliff of white rocks, the top of which is partly without wood. The west side of the island is low. On the cape stands the lighthouse of Shelburne, which has a remarkable appearance during the day, being painted black and white in vertical stripes, and at night exhibits a small light below the upper one, by which it is distinguished at night from the light of Sambro', or Halifax. The upper light is about 150 feet above the level of the sea, and the smaller light is 36 feet below the lantern. The latitude of this lighthouse is 43° 37′ 31″; longitude, 65° 16′ 30″.

Mr Backhouse has given the following directions for this harbour:—

When coming in from the ocean, after you have made the lighthouse, bring it to bear N.W., or N.W. by N., and steer directly for it. The dangers that lie on the east side, going in, are the Rugged Island Rocks, a long ledge that stretches out from the shore 6 or 7 miles, the Bell Rock, and the Straptub Rock. On the west side is the Jig Rock. The Bell Rock is always visible, and bold-to.

When you are abreast of the lighthouse, steer up in mid-channel. Roseneath Island is pretty bold-to all the way from the lighthouse to the N.W. end of the island. When you are half-way between George's Point and Sandy Point, be careful of a sunken rock running off from that bight, on which are only 3 fathoms at low water; keep the west shore on board to avoid it: your depth of water will be from 4, 5, to 6 fathoms.

Sandy Point is pretty steep-to. Run above this point about half a mile, and come to anchor in 6 fathoms, muddy bottom. If you choose, you may sail up to the upper

part of the harbour, and come to anchor in 5 fathoms, muddy bottom, about one mile and a half from the town, below the harbour flat.

In sailing in from the eastward, be careful to avoid the Rugged Island Rocks, which are under water; do not haul up for the harbour till the lighthouse bears from you W. by N. $\frac{1}{2}$ N.; by that means you will avoid every danger, and may proceed as taught above.

In sailing into Shelburne from the westward, do not haul up for the lighthouse till it bears from you N.W. by W. $\frac{1}{2}$ W.; you will thus avoid the Jig Rock on the west, which lies within one mile and a quarter S. $\frac{1}{2}$ W. from the lighthouse, and is pretty steep-to.

Should the wind take you a-head, and constrain you to ply to the windward up the harbour, do not make too bold with the eastern shore; for half-way between George's Point and Sandy Point, is a reef of sunken rocks. When you come abreast of them, you need not stand above half-channel over to avoid them: the Hussar frigate, in plying to windward down the harbour, had nearly touched on them. On the west shore, abreast of Sandy Point, it is flat; therefore do not make too bold in standing over.

The ledge of rocks that his Majesty's ship Adamant struck upon, which lies abreast of Durfey's House, is to be carefully avoided: do not stand any further over to the westward than 4$\frac{1}{2}$ fathoms, lest you come bounce upon the rock, as the Adamant did, and lay a whole tide before she floated, and that not without lightening the ship. The east shore has regular soundings, from Sandy Point upward, from 3 to 4, and 5 to 6, fathoms, to the upper part of the harbour, where you may ride safely in 5 fathoms, good holding ground. Your course up from the lighthouse in a fairway, is from N.W. to N.W. by N.; and when you round Sandy Point, the course is thence N. by W. and North, as you have the wind. The entrance of Shelburne Harbour affords a refuge to ships with the wind off-shore, (which the entrance of Halifax does not,) and there is anchoring ground at the mouth of the harbour, when it blows too strong to ply to windward.

In sailing from the westward for Shelburne at night, you must not haul up for the harbour until the light bears N. by E. $\frac{1}{2}$ E., in order to avoid the Jig Rock; and, when sailing in, from the eastward, you must not haul up for the harbour till the light bears W. by N. $\frac{1}{2}$ N., in order to avoid the ledges that lie off the Rugged Islands, and bear from the lighthouse E. $\frac{3}{4}$ S., eight miles distant. You may stop a tide in the entrance of the harbour, in from 16 to 10 fathoms, sand, and some parts clay, bottom.

Shelburne is a safe harbour against any wind, except a violent storm from the S.S.W. At the town, the wind from S. by E. does no harm; although, from S. by W. to S.W. by S., if blowing hard for any considerable time, it is apt to set the small vessels adrift at the wharves; but, in the stream, with good cables and anchors, no winds can injure.

Shelburne affords an excellent shelter to vessels in distress, of any kind, as a small supply of cordage and duck can, at almost any time, be had. Carpenters can be procured for repairing; pump, block, and sail-makers, also. It affords plenty of spars, and, generally, of provisions. Water is easily obtained, and of excellent quality. The port-chargee for a vessel which puts in for supplies only, is fourpence per ton, light money, on foreign bottoms. If a vessel enters at the custom-house, the charges are high: but that is seldom requisite.

NEGRO HARBOUR is named from Cape Negro, the eastern limit of an island which lies before its entrance. The cape itself is remarkably high, rocky, and barren, and bears S.W. $\frac{1}{2}$ S., distant 7$\frac{1}{2}$ miles, from Shelburne Lighthouse. Cape Negro Island is very low about the middle, and appears like two islands. The best channel in is on the eastern side of the island; but even this is impeded by two ledges, named the Gray Rocks and Budget; the latter a blind rock, of only 6 feet, at a quarter of a mile from the island, on both sides of which there is deep water. The Gray Rocks lie at a quarter of a mile to the north-eastward of the Budget, and serve as a mark for the harbour.

On the eastern side of the Budget the depths in the passage are from 14 to 10 fathoms. With Shelburne light shut in, you will be within the rocks. There is excellent anchorage on the N.E. of Negro Island, in from 6 to 4 fathoms, bottom of stiff mud. The northern part of the island presents a low shingly beach, and from this a bar extends over to the eastern side of the harbour, on a part of which are only 15 feet of water. The river above is navigable to the distance of 6 miles, having from 5 to 3

fathoms, bottom of clay. The passage on the western side of Negro Island is very intricate, having numerous rock, &c.; yet, as these may be seen, it may be attempted with caution by a stranger, in the event of distress.

PORT LATOUR (Port Haldinand of Des Barres) is separated from Negro Harbour by a narrow peninsula. The extreme points of the entrance are Jeffery Point on the east, and Baccaro Point on the west. Between, and within these, are several clusters of rock, which render the harbour fit for small craft only.

On Point Baccaro or Point Latour is a square building, painted white with a black ball on the seaward side, which exhibits a bright flash light of 15″ duration, with alternate eclipses of 24″ or 25″. It stands in lat. 43° 26′ 9″ N., and long. 65° 23′ 7″ W., and bears from the extremity of Cape Sable S. 77° W., 7⅘ miles; south extremity of the Black Ledge S. 34° E., 1½ mile; the Salvages, or Half-Moons, S. 88° E.; and the Brazil Rock, S. 4° 10′ W., distant 5½ miles. The variation of the compass is estimated to be 15° 40′ W.

At half a league, S.W. by W., from Baccaro Point is situated the Vulture, a dangerous breaker; and at half a league S. by W. ½ W., from the same point is situated the Bantam Rock with only 4 feet over it at low water.

BARRINGTON BAY, to the westward of Port Latour, is formed by Cape Sable Island, which lies in front of its entrance. There are two passages into it: that to the eastward is between Baccaro Point and Sable Island, being at its entrance 3 miles wide; that to the westward is not more than a mile broad; both are encumbered with numerous and extensive flats, narrowing the passage, and rendering the navigation dangerous; for although the channels may generally be discovered, by the waters appearing dark, yet it will require a leading wind to wind through to the anchorage, which is towards the head of the bay, and about 1½ mile above the town; here there are from 18 to 26 feet water. The passage to the northward and westward is used by small vessels only, and is not safe without a commanding breeze, as the tide of ebb is forced unnaturally through to the eastward, by the Bay of Fundy tide, at the rapidity of 3, 4, and sometimes 5 knots an hour: setting immediately upon the rocks which lie within it. The town of Barrington is situated at the north-eastern extremity of the bay; the land is somewhat stony, but affords excellent pasturage, and the stock of cattle is very considerable.

Vessels entering into this bay by the eastern passage, must be very careful to avoid Baccaro Point, giving it a wide berth of full 2 miles, on account of the Bantam, the Vulture, and other rocks which lie off it.

CAPE SABLE.—Cape Sable is the south-eastern extremity of a small narrow island, which is separated and distinct from Cape Sable Island. The cape is white, broken, evidently diminishing, and may be seen at the distance of 5 leagues. From this island ledges extend outward, both to the east and west; the eastern ledge, named the Horse-Shoe, extends 2⅕ miles S.E. by S.: the western, or Cape Ledge, extends 3 miles to the S.W. The tides, both flood and ebb, set directly across these ledges at the rate of 3 and sometimes 4 knots an hour, causing a strong break to a considerable distance, particularly when the wind is fresh; it will then often extend full 3 leagues out, shifting its direction with the tide, the flood carrying it to the westward, and the ebb to the eastward; the former running a considerable time longer than the latter. This rippling, or breaking of the water, may be considered hazardous to pass through in a gale of wind; but there are not less than 8, 10, 12, and 20 fathoms, rocky ground. It is high water at Cape Sable, F. and C., at 7h. 45m.; spring-tides rise 12 feet, neaps 6 feet.

To the north-westward of Cape Sable is a small island, named Green Island, to the north-east of which an inlet runs in to Cape Sable Island, forming Bonnetta Cove, where good anchorage may be found in 3 fathoms water; the entrance to it is narrow, and runs in between a spit and the island; this will be too difficult for a stranger to discover, but it is frequented by the coasters and fishermen.

Favourite Cove is situated in the Western Channel, and about the middle of Cape Sable Island; here also small vessels may run in and anchor in 2 fathoms, behind a small islet which lies mid-channel, at its entrance, affording a channel on either side, but that to the eastward is the best, and has the deepest water. With S.W. gales there is always good anchorage off the N.E. side of Cape Sable Island; but Shag Harbour, which lies on the opposite side of the Western Channel, and bears N.N.W. from Bonnetta Cove, is full of shoals, and must not be attempted unless you are well acquainted with it. It is here high water, full and change, at 9 o'clock; spring-tides rise 11 feet, neaps 8 feet.

The Brazil Rock is a flat rock, covering a space of about 10 yards, over which are only 8 and 9 feet at low water; a tail extends 90 or 100 yards from its base, having 6 to 8 fathoms water; the tide running strong over this, causes a ripple, and makes the rock appear larger than it really is. Southward of the rock, at the distance of about a mile, you will have 35 and 34 fathoms, then 30 and 22 as you approach nearer to it; but towards the Cape Sable shore the soundings are regular, from 10 to 15 fathoms; you will then lessen your water to 10 and 7 fathoms, when you will be at the edge of the Race Horse Shoal. To the northward of the Brazil Rock, in the direction of the Bantam Rock, you will have 16, 19, 15, 17, 16, 15, and 10 fathoms; with this latter depth you will be near the Bantam, and must tack to the westward. The exact position of the Brazil Rock has been much disputed, but the place assigned to it, by the recent surveys, is in latitude 43° 21′ 30″ N., and longitude 65° 26′ W.; but M. Des Barres places it in latitude 43° 24′ 15″ N., and longitude 65° 22′ W.

SABLE ISLAND, AND BANKS OF NOVA SCOTIA.—This island should always be approached with great caution, and the lead strictly attended to; this is the more necessary as its true position has not yet been fully determined. The southernmost part of this island has been placed by recent surveys in 43° 55′ N., and the west end in long. 60° 14′; and the east end of the island in 43° 59′ N., and long. 59° 48′ W.

On the days of the new and full moon, it is high water along the south shore of the island at half an hour after 8 o'clock, and it flows till half an hour past 10 o'clock on the north side, and till near 11 o'clock in the pond. Common spring-tides rise 7 feet perpendicular, and neap-tides 4. The flood sets in from the S.S.W. at the rate of half a mile an hour; but it alters its course, and increases its velocity, near the ends of the island. At half-flood it streams north, and south at half-ebb, with great swiftness, across the north-east and north-west bars; it is, therefore, dangerous to approach them without a commanding breeze.

The north-east bar runs out E.N.E., about 4½ leagues, from the eastern extremity of the island, all which is very shoal, having in few places more than 2 fathoms water, whence it continues east and E. by S., deepening gradually to 12, 15, and 18 fathoms water, at the distance of 8 leagues, and shapes to the south and S.E., sloping gently to 60 and 70 fathoms water. To the northward and eastward it is very steep, and, in a run of 3 miles, the water will deepen to 130 fathoms. Abreast of the body of the island the soundings are more gradual. The shoal ground of the north-west bar shapes to the westward, and deepens gradually to 70 fathoms water, at the distance of 20 or 25 leagues from the isle; and winds easterly and southerly, until it meets the soundings off the north-east bar. The quality of the bottom, in general, is very fine sand, with a few small transparent stones; to the northward, and close to the north-east bar, the sand is mixed with many black specks; but near the north-west bar, the sand has a greenish colour. The north-east bar breaks in bad weather, at the distance of 7 or 8 leagues from the island; but, in moderate weather, a ship may cross it, at 6 leagues distance, with great safety, in no less than 8 or 9 fathoms water; and if the weather be clear, the island may be seen very distinctly from a boat at the distance of 5 leagues. The north-west bar breaks in bad weather at 8 miles from the island.

M. Des Barres thus describes these bars; but they have altered their form and extent, within the last 30 years, in consequence of repeated storms, and the violence of the sea.

Captain Joseph Darby, the Superintendent of Sable Island, has observed that "he has known the island for the last 28 years, in which time the west end has decreased in length about 7 miles, although the outer breakers of the north-west bar have the same bearing from the west end of the island that they had then, (about N.W., by compass, distant about 8 miles,) which clearly shows that the whole bank and the bar travels to the eastward. The ground is high, and the water shoal outside of these breakers, 7 or 8 miles, in a N.W. direction. The flood-tide sets across the bar to the northward and eastward, very strong, and the ebb-tide to the opposite point, changing alternately at half-flood and halt-ebb. The ground to the southward and westward of the bar is very regular, deepening very slowly to a considerable distance; but to the northward and eastward the ground is very steep, and from breakers, or from very shoal ground out-

side the breakers, you fall into deep water all at once. The bank to the N.W. is very uneven, and curves round to the northward in a steep ridge; and at the distance of about 35 miles from the island, in a N.W. direction, are 10 fathoms water, and W.N.W. and E.S.E. from that the ground falls very suddenly into deep water. This ridge joins the middle ground, and extends, in an easterly and N.E. direction, to a considerable distance, with shoal water, the bottom in small ridges, with 11, 12, 11, and 13 fathoms of water, and so on over it; and between this bank and the bar, or the island, the water is very deep, 80 or 90 fathoms. The bank extends to the eastward abreast of the island; the southernmost edge of the bank, from 20 to 25 miles, to the northward of the island.

"The east end has altered very little since my knowledge of it, (except in height,) which is much greater than it was; and the whole island seems to increase in height every year, but grows narrower. There is a low *bar of dry sand* running from the high land off the east end, in a N.E. direction, about 3 miles, from whence shoal water, that always breaks, extends about 2 miles farther, in an E.N.E. direction; outside of which, for a distance of about 6 miles, is a passage across the bar, with from $2\frac{1}{2}$ to 3 fathoms water upon it. Outside of that again is a piece of high ground that always breaks, and is sometimes dry, and extends in an E.N.E. direction between 2 and 3 miles, from which the shoal ground continues, in the same direction, some miles farther. The flood-tide across this bar sets very strongly to the northward, and the ebb-tide in the opposite direction, but not so strong. The soundings to the southward and eastward of the bar are flat and regular for a considerable distance, but to the northward and westward the ground is very steep; close to the breakers are 10 fathoms, and goes down suddenly to 70, 80, and 100 fathoms, or upwards. I believe, in general, there is a strong current setting to the W.S.W. between the Sable Bank and the Gulf of Mexico stream; and there is a strong current sets down the western side of the Gulf of St. Lawrence stream in a S.S.W. direction. The current along the south side of the island is in very shoal water, runs both east and west, and is influenced by the winds. The most of the wrecks that happen here are in error of their longitude: for instance, vessels bound to the eastward think themselves past the island when they get on shore upon it; and vessels bound from the westward (say from Europe), do not thing themselves so far to the westward when they get on shore upon it. I have known several cases of vessels from Europe that have not made an error in their longitude exceeding half a degree, until they came to the Banks of Newfoundland, and from thence, in moderate weather and light winds, have made errors of from 60 to 100 miles, which, I think, goes far to prove the existence of a westerly and southerly current between the Grand Bank and here; and also of the existence of a westerly current between the Sable Bank and Gulf of Mexico stream, which will be stronger or weaker according to the distance between the stream and the banks.

"When a casualty has occurred, and you find you are on the body of the island, I would recommend that nothing of masts or rigging be cut away, without the vessel should be very tender, and then you may do it to ease her a little; but a vessel of ordinary strength will bear her spars until she heaves upon the beach, or settles in the sand, and lays quiet; as lives and property have often been saved by a vessel having her spars standing, as from the heads of which you may often send a line ashore, when it is not possible to work a boat; and by sending a good hawser after that, and securing it well to the shore, a chair, or other more efficient article, may be rigged for conveying passengers, or others, or valuable property, over the breakers in safety; as from the nature of the soft sandy bottom, a vessel will not go to pieces so soon as if she was on the rocks; and, by the rigging being left standing, it may afterwards be saved; whereas, if the masts are cut away, the whole of the rigging goes with them, and all get tangled and buried in the sand, and are generally totally lost.

"If you are on either of the bars, the first consideration should be to secure the boats, and lighten the ship, and leave her as soon as ever you have to abandon the hopes of getting her off; endeavour to get to the leeward of the breakers, and land on the island, according to circumstances. Endeavour to land on the north side, if possible, as vessels that get on to the bars very soon disappear altogether, either by going to pieces in the irregular sea and strong currents, or by rolling over the steep bank to the northward, and sinking in deep water.

"When property can be saved on the island, it is proper for the master and his crew to do the utmost in their power to save it; they can get the assistance of the people on the island and a boat and a team of horses, not for hire, for they are employed by

government, and the island draws a salvage of whatever may be saved on it, which is apportioned by the magistrates at Halifax. The more there is saved by the master and crew, the less salvage will be taken; but it is very often the case, the crews will not assist to save property; and whatever is saved is done exclusively by the establishment, in which case the salvage is pretty high. There are buildings on the island for the shelter of persons cast away on it, with provisions for those who may have none; also some buildings for the reception of perishable goods: these buildings, and whatever is put into them, are under the charge of the superintendent. All property saved must be sent to Halifax by the first opportunity. The master can keep inventories, and continue with the goods if he likes, but has no control over their destination; but, I believe, by petitioning the Governor of Halifax, he might get permission to take them where he pleases, by paying the duty and salvage.

"When any property is saved on the island, it is sent to Halifax, where it is advertised and sold by order of the Commissioners, and the proceeds paid into their hands, out of which they pay the King's dues, the salvage apportioned by the magistrates, the expenses of freight, and other small charges; and the residue is paid over to the master, or other authorized agent, for the benefit of the underwriters, and all concerned. The superintendent is under the control of the Governor and the Commissioners, and can take no new step without orders from them. The above and before-mentioned custom is an old and long-established rule, and supported by many acts of provincial legislature, and more particularly by an act passed the 4th day of April, 1836, and in the sixth year of his Majesty's reign (William IV.), which does more fully explain and set forth the rules for the guidance of the establishment.

"The north side is very safe, and a vessel may approach any part of it within a mile; and vessels in distress might, by standing in on the north side, and near the west end, where the principal establishment is, get a supply of fresh water or fuel, or a partial supply of provisions and fresh meat, except in cases of a strong breeze and heavy sea on shore. There is no difficulty in working boats on this side of the island. The south side is also very safe to approach in clear weather; but from the heavy sea that constantly breaks on it, the communication with a vessel, by boats, is extremely difficult, except after a spell of northerly winds for 3 or 4 days, when the sea becomes smooth, and boats may work."

Should you be on shore in a fog, and your true position unknown, lower a boat and observe that if the breakers extend in a direction N.W. and S.E., you are on the N.W. bar. If the breakers extend W.S.W. and E.N.E., you are on the N.E. bar; and if they are seen to the northward, ahead, and extending from east to west, you are on the south side of the island: but should they be seen to the southward, ahead, and extending from east to west, you are on the north side of the island.

ICE.—H.M. packet-brig, Express, fell in with two islands of ice on Sable Island Bank, on the 7th July, 1836, in 45 fathoms water; estimated heights 180 and 150 feet; latitude 43° 13′ N., air 46°, water 42°.

The Nova Scotia Banks extend nearly 70 leagues, in a westerly direction. From Sable Island they are from 20 to 25 leagues wide, and their inner edges are from 14 to 18 leagues off shore; they are intersected by narrow, winding channels (the bottom of which is mud), running N.W. and S.E. Between these banks and the shore are several small inner banks, with deep water and muddy bottom. The water deepens regularly from Sable Island to the distance of 22 leagues, in 50 fathoms, fine gravel; thence proceeding westward, the gravel becomes coarser; continuing westward to the western extremity of the banks, the soundings are rocky, and shoalen to 18 and 15 fathoms water.

The south-west end of Banquereau lies about 23 miles, N.N.E. ½ E., from the west end of Sable Island, from thence it extends to the eastward as far as long. 56° 35′ W., where it is separated from the St. Pierre Bank by a narrow gully of deep water. This bank is about 60 miles across in its widest part, which is near the middle, and has soundings over it of 30 to 40 fathoms, but near its eastern extremity it has been represented to have very much less water, there having been found at 5 leagues from this end only 16 to 18 fathoms, slimy sand and clams. In long. 59° W., and lat. 44° 43′ N., there is said to be a shoal spot of 15 fathoms, with soundings around it deepening from 25 to 40 fathoms, but these shoal spots rest upon very indifferent authority, and until a survey is made of the bank their existence must be considered doubtful. Capt. R. Owen, R.N., in 1832, ran across this bank in lat. 44° 35′ N., and found the depth to be from 30 to 37 fathoms, with irregular soundings on a bottom of sand, stones and shells,

with sea-eggs. The soundings on the north side of the bank are deep close to its edge, as you immediately fall into 90 or 100 fathoms, and also immediately off the southern edge are 120 fathoms. When sailing along the south edge of the bank caution is necessary in hazy weather, that you do not miss the gully separating it from the Sable Island Bank, as you may thus get on the bars extending from that island before you are aware that you are off the bank.

Off the northern edge of Banquereau and between the longitudes of 58° and 59° W. and latitudes 45° and 46° N. is the Mizen Bank, which may be considered to be a part of Banquereau. It is about 25 miles in extent, and has 26 to 40 fathoms on it, with deep water all round.

Remarks.—It may be observed, generally, that the soundings all along the Nova Scotia Coast, between Cape Canso on the E.N.E. and Cape Sable to the W.S.W., are very irregular, from 25 to 40 and 50 fathoms; therefore, in foggy weather, do not stand nearer in-shore than 35 fathoms, lest you fall upon some of the ledges. By no means make too bold with the shore in such weather, unless you are sure of the part of the coast you are on; for you may, otherwise, when bound for Halifax, fall unexpectedly into Mahone, or Mecklenburgh Bays, and thus be caught and endangered by a S.E. wind.

The weather on the coast is frequently foggy in the spring and some part of the summer, in particular at the distance of 4 or 5 leagues from the shores: but on approaching nearer, the weather is found more clear, and, with the wind from the land, it is perfectly clear and pleasant.

At the entrance of the harbours and rivers on the coast, salmon is taken from April till August; and from one to two or three leagues out to sea, cod, halibut, haddock, rays, and mackerel. Herrings are taken in the bays and harbours in the months of June and July, and tam-cod all the year round.

THE BAY OF FUNDY, AND THE COASTS BETWEEN CAPE SABLE AND PASSAMAQUODDY BAY.

GENERAL REMARKS.—If a chart of the S.W. coast of Nova Scotia be examined, and the relative situation of that coast, as exposed to the Atlantic Ocean, with the consequent and variable set of the tides about it, as well as about the Island Manan, &c., be considered, the mariner will be naturally led to consider that its navigation, involved in occassional difficulties, requires very great attention; and the supposition is justified in consequence of the great number of ships lost hereabout, even within a few years; yet there are few obstacles which a moderate exercise of skill and resolution would not have been able to overcome, and it is to be feared that the absence of these qualifications occasioned such losses to a greater extent than the actual dangers of the navigation.

"It is essential," says Mr Lockwood, "to the safety of those who are navigating the Bay of Fundy, that it should be clearly understood; and in cases of necessity, many are the places of safety to which vessels might resort, even without the advantage of a pilot; although no man would attempt to justify the economy of saving the expense of pilotage on a coast like this, where currents, fogs, and changes of weather may confound the best judgment.

"In order to lessen these accidents, if not totally to prevent such fatal occurrences in future, let the mariner be fully convinced of the necessity of frequently sounding with the deep-sea lead, and see the expediency of having his anchors and cables fit for immediate use; this cannot be too strongly impressed upon his mind, for vessels well equipped and perfect in gear, with their anchors stowed as in the middle of the Atlantic Ocean, have been here wrecked in moderate weather, and so frequently, that such gross neglect cannot be too much reprobated; such serious losses will, we trust, be hereafter prevented, more especially as it is so dependent upon the mariner himself, and may be, in most cases, remedied by only sounding in time, and keeping the lead in continual action."

If from Europe, and bound to the Bay of Fundy, endeavour to keep in about 43° or 43° 5′ N., and having obtained soundings on the western part of Sable Island Bank, keep the deep sea-lead going as you proceed to the westward, sounding progressively

on the Le Have and Cape Sable Banks; the former may be known by the hard rocky bottom, and the latter by being generally black gravel. These precautions become more necessary, as a fair wind is frequently accompanied by a thick fog, often for several days together.

In thick weather, by a careful attention to the soundings on your approach towards Cape Sable, and keeping your vessel under commanding canvass for getting soundings, you may round the cape with safety in 35 or 40 fathoms: the soundings will inform you when off the cape, being small black stones, sand, and gravel. When across this bank you will fall into deep water in the bay, and may shape a course for the American shore, and should endeavour to make the land about Moose Peck Head, or Machias. Mount Desert and the Skutock Hills may be seen at a great distance; sometimes they may be seen clearly from the mast-head over the fog. It may be mentioned that one chief cause of the disasters which occur on the coast of Nova Scotia and entrance of the Bay of Fundy is the neglect of the use of the lead.

SEAL ISLAND.—The southernmost point of Seal Island bears from Cape Sable about W.N.W. $\frac{1}{2}$ W., distant 16 miles. The island is a little more than 2 miles in length from north to south, and its southern part, covered with scrubby trees, is elevated 30 feet above the sea. A dangerous reef extends a mile south, from the south end of the island.

On the central and highest part of Seal Island stands a lighthouse, the tower of which is of an octagon shape, built of wood, and painted white: it shows a conspicuous fixed light, 120 feet above high water mark, which may be seen, on approaching, from every point of the compass, to the distance of about 18 miles. The building must not be approached nearer than at least 3 miles southerly and $1\frac{1}{2}$ mile westerly, and then with great care to avoid the Blonde Rock and other dangers. The other sides of Seal Island are bolder, and there is anchorage generally all round the island at half a mile off, but dependent upon the wind. The position of the lighthouse is lat. 43° 23′ 50″ N., and long. 66° 0′ 20″ W.

At the distance of about 2 miles, S.S.W., from this lighthouse is situated the Blonde, a very dangerous rock, covered at high water, on which the frigate of that name was lost in 1777. Close round the rock are 7, 9, and 10 fathoms water. The Blonde is particularly dangerous, as the ebb-tide sets strongly towards it; and from the lowness of the Seal Islands you may be on it before you are aware, even in fine weather. About a mile to the westward of the Blonde are very heavy and dangerous overfalls, which present a very alarming appearance. To the northward of these, $4\frac{1}{2}$ miles distant, is a bed of shoal ground of 16 feet, which causes a violent rippling. In November, 1848, a rock was discovered by the ship Zetland, on which were only 3 fathoms water; from it Seal Island Lighthouse bore N.E. by N., $2\frac{3}{4}$ miles.

Off the west side of Seal Island, at the distance of a mile, are two small rocky islets named the Devil's Limb and the Limb's Limb: the Devil's Limb is visible at all times, and the Limb's Limb is only seen at half-tide. The smoothest anchorage is midway between these and Seal Island, where will be found $3\frac{1}{2}$ or 4 fathoms, clear sand. It is high water off the Seal Islands at 8h., spring-tides rise 14 feet, and neaps 12 feet.

At the distance of 11 miles, S.W. by W., from the lighthouse on Seal Island is the Pollock Rip, a small shoal spot having on it about 6 fathoms; it is said to bear W. by S. $\frac{1}{4}$ S., 9 miles from the Blonde Rock.

THE MUD ISLES, also named the North Seals, are a group of five low rugged islands, the southernmost of which is situated at $2\frac{1}{2}$ miles from the N.E. part of Seal Island. Between them and Seal Island is a passage with room for any ship, but there are overfalls of 18 feet at the distance of a short mile from the southern Mud Island. In the channel are from 10 to 15 fathoms; in sailing through it, keep nearer to Seal Island than the Mud Islands on account of the above-mentioned overfalls. This channel lies with Cape Sable bearing S.E. by E. $\frac{3}{4}$ E., distant 5 leagues. At half a mile to the N.W. of the north-western Mud Isle is a dangerous ledge, bare at half-ebb, named the Soldier's Ledge, which is more than half a mile in length from N.N.E. to S.S.W. The course and distance to pass from Cape Sable to between Seal Island and the Mud Islands are about N.W. by W., six leagues. Several overfalls may be found in this tract, of from 15 to 7 fathoms, bottom of gravel, which breaks violently in spring-tides. The north end of Seal Island is bold-to; there being within a cable's length from 5 to 7 fathoms.

THE TUSKETS, OR TUSKET ISLES, consist of a group lying to the northward of

the Mud Isles, and to the S.W. of the entrance of Tusket River. Some of them are of considerable size, and there are many shoals and ledges among them, so that although there may be navigable channels between, no stranger should attempt these passages. On the west of these isles are Green Island and the Gannet Rock: the latter is high, being 36 feet above the sea at high water, and is whitened with birds' dung. At about half a league from it, on the S.W., is situated the Opossum's Ledge, which appears at half-ebb. At $1\frac{1}{4}$ mile, N. $\frac{1}{2}$ W., from the Soldier's Ledge is a ledge named the Actæon, which thence extends N. by W., two-thirds of a mile. At the distance of half a mile farther, in the same direction, is a shoal of similar size, named the Bald Ledge, having over its centre a depth of only 2 fathoms. Strangers ought to avoid the navigation in this locality, as many of the dangers do not appear till low water.

Between the Gannet Rock and the Seal Islands are from 6 to 20 fathoms, and between the Gannet Rock and Cape Fourchu 23 to 14 fathoms.

PUBNICO HARBOUR is a very good one, easy of access, and well situated for vessels bound to the Bay of Fundy, which, in distress, may here find supplies as well as shelter. From the south end of Seal Island to the entrance of Pubnico, the bearing and distance are N.E. $\frac{1}{2}$ E., 14 miles; the depths between varying from 20 to 16 fathoms, and thence to 12 and 6 fathoms, up to the beach, the proper anchorage for a stranger. On the western side, above the beach, is a ledge, partly dry at low water. On sailing towards Pubnico, you pass on the west side of John's Island, which lies $2\frac{1}{2}$ miles to the southward of the harbour, and the north side of which affords good shelter during a S.E. gale. Small vessels lie along the beach forming the eastern part of this island; but coasters commonly pass through the inner channel, within St. John's, Mutton, and Bonne Portage Islands, by Cockewit, and thence towards Barrington Bay by Shag Harbour; but these places are partly shoal, and unsuitable for large vessels.

From the entrance to Pubnico, a W. by N. course leads clear to the southward of the Tusket Isle. On this course you will pass at a mile to the southward of the southernmost Tusket or Bald Isles. A course W. $\frac{1}{2}$ S., 12 miles, will lead between and clear of the Actæon and Soldier's Ledges, whence you may proceed either to the N.W. or S.W. according to your destination. When passing Green Island observe that a reef runs off the island to the south-westward almost three-quarters of a mile, and has off it from 6 to 5 fathoms water, and between it and the Gannet Rock from 12 to 17 fathoms.

Jebogue is a small place too shoal and intricate to be visited by any but fishermen and coasters, who in running for it have to avoid a sunk reef lying $1\frac{1}{2}$ mile east of Green Island, and also a rocky shoal, named the Dragon, lying between the island and Jebogue Head, with the head bearing N.E. northerly, distant fully a mile. Round this shoal are 7 to 10 fathoms. At the entrance of the harbour there is a small knoll of 3 fathoms, and shoal water extends also off its eastern side. The country in the vicinity is moderately high and cultivated.

To the eastward of Jebogue are several inlets, with settlements on their shores, but they are not visited by any but the coasters. Among the largest of these inlets is the outfall of the Tusket River.

CAPE FOURCHU, or the Forked Cape, is very remarkable, being rocky, barren, and high, and is so named from the island, which forms it, having two narrow prongs running out to the southward. The cape bears from Jebogue Head N. by W. $\frac{1}{4}$ W., distant $4\frac{1}{2}$ miles. On the island is a lighthouse which exhibits a brilliant revolving light, at 135 feet above the level of the sea, visible for one minute and a quarter, and invisible half a minute, to the distance of 20 miles. The building is painted red and white, in vertical stripes; is 58 feet high, and stands in lat. 43° 47′ N., and long. 66° 8′ 50″ W. In fine weather you may approach the light to within a third of a mile, and anchorage may be obtained to the eastward and northward of it, and also to the westward during fine weather, but caution is requisite. Pilots may be obtained here. Spring tides rise 16 or 17 feet, and neaps 12 feet.

The inlet formed by the two prongs of Fourchu Island must not be mistaken for the entrance to Yarmouth, which lies to the eastward of them both.

YARMOUTH.—If bound to Yarmouth Harbour, you should go to the westward o Seal Island, the Gannet Rock, and Green Island, giving the Gannet a berth of about 2 miles, as then you will have no danger to encounter, but find from 20 to 30 fathom water all the way. Having passed Green Island, the course towards Yarmouth Harbour will be about N.N.E. $\frac{1}{4}$ N. In this passage you will meet with the Bagshot Rock, which

dries at low water, and is dangerous, running out shoal full half a mile to the southward; it bears from Cape Jebogue nearly N.W., distant almost $2\frac{1}{4}$ miles; from Cape Fourchu S.S.W. $\frac{1}{4}$ W., almost $2\frac{1}{4}$ miles, and from the entrance of the harbour S. by W. $\frac{1}{2}$ W.; you may pass on either side of this rock, and run on N. by E. $\frac{1}{2}$ E. for the harbour's mouth. The fairway is, to follow the eastern shore until you reach the eastern point, to which you are to give a berth, and proceed mid-channel: you will readily perceive the isthmus, with a battery upon it, and under its lee; to the northward is the anchorage; the ground is good, and the depth of water from 5 to 6 fathoms.

About a mile above the anchorage is the town. It has become a place of considerable trade; and there are several fine vessels belonging to it, which indicate its rising importance.

From Cape Fourchu to Cape Mary the main land extends N. $\frac{3}{4}$ E., 6 leagues, and from Cape Mary to the lighthouse on Bryer's Island is N.N.W. $\frac{1}{4}$ W., 13 miles; all this coast is level and appears woody, with a few red earthy banks. Almost opposite to Cape Fourchu is the Lurcher Shoal, and between that and Cape Mary is the Trinity Ledge.

The Lurcher Rock lies nearly W.N.W. from Cape Fourchu, distant 14 miles, and is about 3 acres in extent, and said to have $2\frac{3}{4}$ fathoms on its shoalest part. Around the edge of the shallow water are 10, 11, and 12 fathoms, and a little farther off from 20 to 30 fathoms, while between it and Cape Fourchu are 28, 38, and 14 fathoms. From Cape St. Mary the Lurcher bears S.W. $\frac{1}{2}$ W., distant 6 leagues.

The Trinity Ledge is about three-quarters of an acre in extent, and has the tops of three small rocks showing themselves at low tides. This danger bears from Cape Fourchu N. by W., distant 14 miles, and from Cape St. Mary S.W. $\frac{3}{4}$ W., 6 miles; the depth of water to a mile round it is from 12 to 15 fathoms. The stream runs very strongly over these two dangers, but the anchorages in their vicinity are tolerably good for a tide. Between this ledge and Cape Fourchu are 12 to 24 fathoms, and from 11 to 12 will be found between Capes Fourchu and St. Mary.

Vessels coming round Cape Sable, and intending to take the Tusket Passages, may steer N.W. by N., and proceed through either of the channels already described, whichever may suit their convenience, or else proceed to the southward of Seal Island for about 35 miles, passing at the distance of 20 miles to the westward of Seal Island; thus the Bay of Fundy will be open, and their course up N.N.W. This will carry them outside of the Lurcher, but the tide will make one point difference in this course, as it sets S.E. and N.W. through the channels of the Mud and Tusket Islands, and near the Manan Ledges, the ebb running W.S.W. and the flood E.N.E., at the rate of 4 knots an hour.

From Seal Island up to Cape St. Mary the land is level and well wooded, and the soundings, under 60 fathoms, extend full 25 and 30 miles off the land, westward of Bryer's Island; and near the Manan Ledges are 60, 80, and 100 fathoms at 3 and 4 miles distance, therefore the lead should always be kept going.

BRYER'S ISLAND, on the S.W. side of the entrance to St. Mary's Bay, is about $3\frac{1}{2}$ miles in length, and about $1\frac{1}{2}$ broad. A lighthouse of an octagon shape, painted white and 92 feet high, stands on the western side of the island, and exhibits a brilliant fixed light visible 15 miles, between the bearings of S. by W. $\frac{1}{2}$ W. westerly and northerly, to N.E. by E. Here the tides are very strong, rendering great care necessary when sailing in this vicinity. Pilots can usually be obtained. The position of the lighthouse is 44° 14′ 51″ N., and long. 66° 23′ 2″ W., according to the recent determination of Captain Owen, R.N.

From the south-eastern part of the island a long and narrow reef runs out fully 2 miles to the S.W., some parts of which are visible; near its extremity is the Black Rock, and to the S.W., distant $1\frac{1}{2}$ mile farther, is a small spot of 3 fathoms. Between the knoll and the reef, and also around the knoll, there are from 15 to 34 fathoms; vessels, therefore, going round to the southward of Bryer's Island, must always give it wide berth. About 3 miles N.W. $\frac{1}{4}$ W. from the northern end of the island, lies the N.W. Ledge, of 10 feet, which is small and dangerous, and nearly S.W. three-quarters of a mile from this is Betson's Ledge; between these two ledges and the island are two others, said also to be dangerous, with deep channels between them; but the situations of these are not clearly known; it will, therefore, be particularly dangerous to approach nearer to the northern side of this island than 4 or 5 miles. Vessels standing to the northward, should not go so near to the Nova Scotia shore as to shut in Bryer's Island

light, for then they might be in danger of running upon some of the ledges about the Gull Rock. In advancing from the westward towards the island, the tide ripples strongly, even in 33 and 45 fathoms, when you are at the distance of 8 or 10 miles off the island.

LONG ISLAND is separated from Bryer's Island by a narrow channel, named the Grand Passage, in which are from 5 to 15 fathoms water. The island runs in a N.E. and S.W. direction, being nearly 10 miles long and about 1½ broad; its coasts are almost straight, and at its farthest end is the Petit Passage, dividing it from a narrow neck of land which continues as far as Gulliver's Hole, about 7 miles to the westward of the Gut of Annapolis.

Grand Passage, as before stated, lies between Bryer's and Long Island. Its southern entrance is 12 miles, N. by W. from Cape St. Mary. In running for it, from abreast of Cape St. Mary, you will have no impediment whatever, but a depth of from 14 to 30 fathoms, and at the entrance of the passage are 18 fathoms mid-channel. Within the entrance you will perceive Billy Islet, which may be passed on either side; from hence to the northward are 4 to 7 fathoms; following the shore of Bryer's Island, opposite its northern point the water deepens to 13 and 14 fathoms; you are then clear of the Grand Passage, and may borrow towards Long Island, steering north-easterly or N.E. by N. into the Bay of Fundy.

On Peter's Island, at the south entrance of the West Port, there is a light-beacon, showing *two white lights, horizontally*, at an elevation of 40 feet, which is intended as a guide to vessels entering the harbour or running through Grand Passage. It stands in lat. 44° 15′ N. and long. 66° 19′ 30″ W., and will be seen on the approach from seaward and St. Mary's Bay, until shut in by the south-west point of Bryer's Island, which bears from it S. 54° W., and Dartmouth Point on Long Island side, S. 25° E.; and on the north side (coming out of the Bay) between N. 11¼° E. and N. 25° E. When in the passage. or fairway through, the light will be seen all round, and can be passed on either side; but the eastern passage is the deepest and widest, and most recommended, The best anchorage is on the Bryer's Island, or western side of the harbour. From hence to Cape St. Mary the course is S. 12° E., and distance 12 miles. The variation of the compass is 16½° W., and the rise of tide about 19½ feet.

Petit Passage lies at the farther extremity of Long Island, about 8 miles distant from the Grand Passage, and is about 280 fathoms wide in its narrowest part, the depth being from 20 to 30 fathoms water: its shores are bold-to, and a N.N.E. ½ northerly course, from abreast of Cape St. Mary, will carry you right through it. On the western side, near the northern entrance, lies Eddy Cove, a convenient place for vessels to anchor in out of the stream of the tide, which runs so rapidly that, without a fresh leading wind, no ship can stem it.

The coast from the south part of Long Island to the Gut of Annapolis, is nearly straight, and trends N.E. by E., 11 leagues. The shore is bound with high rocky cliffs, above which is a range of hills, that rise to a considerable height; their tops appear smooth and unbroken, except near the Grand Passage, Petit Passage, Sandy Cove, and Gulliver's Hole, where those hills sink in valleys, and near the Gut, where they terminate by an abrupt and steep declivity.

ANNAPOLIS GUT forms the entrance to Annapolis Basin which receives the waters of several rivers, the chief of which is Annapolis River, which runs parallel to the Bay of Fundy for 70 miles, being separated from it only by a narrow track of hilly land, not more than 8 miles wide. The shore, on both sides, without the Gut, is iron-bound for several leagues. In the entrance of the Gut you have from 25 to 30 and 40 fathoms water, which, as you run into the basin, shoalens quickly to 10, 8, and 6 fathoms, muddy bottom. The stream of ebb and flood sets through the Gut at the rate of 5 knots, and causes several whirlpools and eddies. The truest tide is on the eastern shore, which is so bold-to, that a ship might rub her bowsprit against the cliffs, and be in 10 fathoms water.

On Point Prim, at the entrance of the Gut of Annapolis, a lighthouse, of a square shape, exhibits a fixed light 76 feet above the sea, visible about 13 miles. The building is of wood, painted red and white vertically.

From the Gut of Annapolis up the bay to Cape Split, the coast continues straight, and nearly in the same direction, with a few rocky cliffs near the Gut, and many banks of red earth under high lands, which appear very even.

A lighthouse of a square form, painted white, has been erected on Black Rock Point, on the southern shore of the Mines Channel, and exhibits a fixed light. The light-

house stands in about lat. 45° 11′ N., and three-quarters of a mile to the westward of Kennedy's Breakwater, and 2½ miles to the eastward of Giran's Breakwater. Small vessels resort to both those places, and the light will therefore be an useful guide to vessels bound to them, as well as to Spencer Island anchorage, or into the Basin of Mines. The light is elevated 45 feet above the level of high water. Spring-tides rise and fall there 50 feet.

BASIN OF MINES.—In the gut leading into the Basin of Mines, from Cape Split to Cape Blowmedown, and from Cape D'Or, on the north side, to Partridge Island, the land rises almost perpendicularly from the shore to a very great height. Between Cape Blowmedown and Partridge Island there is a great depth of water; and the stream of the current, even at the time of neap-tides, does not run less than 5 or 6 fathoms.

Off Cape Split there are whirlpools, which are very dangerous with spring-tides, and run at about 9 knots an hour. Having passed this place, you may anchor in a bay of the north shore, between Partridge Isle, to the east, and Cape Sharp, on the west. From hence, if bound to Windsor River, it will be necessary to get under weigh two hours before low water, in order to get into the stream of the Windsor tide on the southern shore; otherwise, without a commanding breeze, a vessel would run the hazard of being carried up with the Cobequid or eastern tide, which is the main stream, and runs very strongly both ebb and flood; while the Windsor tide turns off round Cape Blowmedown to the southward, and is then divided again, one part continuing its course up to Windsor, and the other forming the Cornwallis tide, running up the river of that name.

In running into Windsor River, a house on Hornton Bluff (within the river on the west) should be kept in a south bearing, and the gap in the land formed by Parsborough River, North; this will take you through the channel between the Flats, which cannot be passed at low water by a vessel drawing 15 feet, much before half-tide. Off Hornton Bluff the ground is loose and slaty, and a ship will be liable to drag her anchors with a strong breeze, particularly at full and change; it might, perhaps, therefore, be better for men-of-war to moor across the stream, and full one-third from the bluff.

The banks and flats appear to be composed of soft crumbling sandstone, which is washed down from the surrounding country in great quantities during the spring; and, by accumulating on them, are constantly increasing their height, and, consequently, lessening the depth of water over them.

HAUTE ISLAND is situated at the entrance of the Mines Channel, and forms a prominent and very remarkable object, from the height and steepness of its rocky cliffs, which, in a most singular manner, seem to overhang its western side. At its eastern end, however, there is a fair landing-place, and anchorage at half a mile off, in 18 fathoms, with the low point bearing about N.E. by N.; here, also, is a stream of water running into the sea. The east end of this island bears from Cape Chignecto S.W. ½ S., 4 miles, and from Cape D'OrW. ½ N., 9 miles. The position of the centre of the island, as determined by Capt. Owen, R.N., by astronomical observation, is in lat. 45° 15′ 6″ N., and long. 65° 0′ 6″ W.

Cape D'Or and Cape Chignecto are high lands, with very steep cliffs of rocks and red earth, and deep water close under them. There is nearly the same kind of shore to the head of Chignecto Bay, where very extensive flats of mud and quicksand are left dry at low water. The tides come in a bore, and rush in with great rapidity, and are known to flow, at the equinoxes, from 60 to 75 feet perpendicular. This renders the Basin of Mines, and many of the rivers hereabout, navigable to a great extent, even up to Londonderry, Windsor, and Onslow, at the extremity of Cobequid Bay.

It is high water, on the full and change, at Cape D'Or and Cape Chignecto, at 11h.; and spring-tides generally rise from 30 to 40 feet, Off Cape Split, at 10h. 15m., springs rise 40 feet; and on the south side of the Basin of Mines, at 11h. 30m.; spring-tides rise about 38 feet.

CHIGNECTO BAY is divided from the Mines Channel by the peninsula, of which Cape Chignecto is the western extremity. It runs up E.N.E., and may be considered as the north-eastern branch of the Bay of Fundy.

Having advanced about 12 or 13 miles within it, you will see on the northern shore Cape Enragée, or Enraged Cape, on which is a lighthouse of a square form, painted white, which shows a brilliant fixed light at 120 feet above the sea.

Nearly opposite to Cape Enragée is Apple River lighthouse, on the southern shore.

The lighthouse stands on Hetty Point, on the northern side of the Apple River, in Cumberland Bay, and about 3 leagues to the eastward of Cape Chignecto, in about 45° 26′ N. latitude. It is a square white building, showing to vessels, approaching it from the westward, two fixed lights placed horizontally. These lights are 40 feet above the level of the sea at high water. The rise and fall at spring-tides there is 55 feet.

At about 11 miles beyond Cape Enragée, the bay divides into two branches, the one leading to Cumberland Basin and the River Missiquash, which runs across the isthmus, and is the boundary between Nova Scotia and New Brunswick; the other branch runs northerly to the Petcudiac River. The Cumberland branch is navigable to within 13 miles of Verte Bay, in the Gulf of St. Lawrence; and it is remarkable that, when the rise of tide in the Cumberland Basin is 60 feet, that in Verte Bay will only rise 8 feet.

From Cape Enragée towards Quaco the land is good, but much broken with steep declivities; the weather is generally humid, the winds boisterous and changeable, with limited and short intervals of sunshine. From Quaco to St. John's the land is high, and the interior hills rise in easy inequalities; the ravines of the cliffs are deep and gloomy, and the indents have beaches. Black River, west of Quaco, distant 12 miles, although dry from half-tide, is a safe inlet for a small vessel.

Quaco Ledge is a dangerous shoal of gravel, upon which many vessels have grounded, situated about 12 miles S.E. ½ E. from Quaco; it extends from N.W. by N. to S.E. by S. about 3½ miles, and is half a mile broad; and there are several irregular patches of rocks lying off its N.E. side. This ledge shows itself at half-tide, and dries for about 100 yards, having but 12 feet of water over it at common tides. At half a mile to the N.E. the eddies with the flood-tides are strong and numerous, the ship's head going nearly round the compass in the space of half an hour; the ebb is a true tide, and sets in a W.S.W. direction towards the ledge. The soundings are from 7 to 14 fathoms, at about two cables' lengths all the way round; but they shoal more gradually from the N.E. The mark to go clear to the southward of the Quaco Ledge, is Cape D'Or, on with the south side of Haute Island. Its position, as determined by Captain Owen, R.N., is lat. 45° 15′ 2″ N., and long. 65° 23′ 25″ W.

On a small rock lying off Quaco Head is a lighthouse painted white and red, in horizontal stripes. It shows a bright light visible about 15 miles, which revolves every 20 seconds, during which time it appears for 14 seconds, and is dark the remaining 6 seconds. The position of the building is lat. 45° 19′ 33″ N., and long. 65° 31′ 55″ W. Spring tides rise 24 feet, and neap tides 20 feet.

ST. JOHN'S HARBOUR.—The entrance of this harbour bears from the entrance of the Gut of Annapolis N. ½ W., 11 leagues, and may be distinguished by the lighthouse on Partridge Island, which shows a fixed light at 120 feet above the level of the sea, visible 20 miles. The tower is painted red and white, in vertical stripes, and is furnished with a bell, to be invariably tolled in thick or foggy weather; its position is lat. 45° 14′ 3″ N., and long. 66° 3′ 5″ W.

A beacon light is shown within Partridge Island, from a tower erected upon a spit or bar which runs out from Sand Point S.S.E. about half a mile, and which dries at two-thirds ebb. This light is of great utility to the coasters, and all other vessels having pilots on board, as it enables them to enter the harbour at all hours of the night.

North-east from the beacon light, just off the town, is a ridge of rocks which is covered at 2 hours' flood; from this ridge and eastward of the town are extensive flats of sand and mud, which dry at low water, and extend along the road to Cranberry Point, stretching off about 2 cables' length.

The bottom, for several miles to the southward of Partridge Island, is muddy, and the depths gradual, from 7 to 20 fathoms, affording excellent anchorage; the passage westward of this island has in it 10 feet; that to the eastward has 16 feet; and abreast of the city are from 7 to 22 fathoms.

A breakwater has been erected on the eastern side of the entrance, below the town, for the purpose of reducing the inset of the sea into the harbour, especially during a southerly gale.

The city of St. John stands on the River St. John near its mouth, and carries on a considerable trade, and many ships are built here. Within the harbour is a valuable fishery, where large quantities of salmon, herrings, and chad are cured for exportation. In the most severe winter it is free from the incumbrance of ice. The country on the banks of the river abounds in excellent timber, coal, limestone, and other minerals. Partridge Island is about 2 miles to the southward of the city, answering the double

purpose of protecting the harbour, and, by its lighthouse, guiding and directing the mariner to its entrance.

The entrance into the river, 2 miles above the town of St. John, is over the Falls, a narrow channel of 80 yards in breadth, and about 400 long. This channel is straight, and a ridge of rocks so extends across it as to retain the fresh water of the river. The common tides flowing here about 20 feet, at low water the level of the river is about 12 feet higher than that of the sea; and, at high water, the level of the sea is from 5 to 8 feet higher than that of the river; so that, in every tide, there are two falls; one outward and one inward. The only time of passing this place is when the water of the river is level with the water of the sea, which is twice in a tide; and this opportunity of passing continues not above 10 minutes: at all other times it is impassable, or extremely dangerous. After passing the falls, you enter into a gullet, which is about a quarter of a mile wide, and two miles long, winding in several courses, and having about 16 fathoms in the channel. Having passed this gullet, you enter a fine large basin $1\frac{1}{2}$ mile wide, and 8 miles long, which enters the main river. The river branches some hundreds of miles up, in a serpentine manner, and runs through a country which abounds with timber, coal, limestone, and many other minerals; and the surrounding lands are now becoming highly cultivated. There is water enough to navigate vessels of 50 tons as high as Frederickton, and in all the branches of the lakes adjacent, except in dry seasons. At times of great freshes, which generally happen between the beginning of April and the middle of May, from the melting of the snow, the Falls are absolutely impassable to vessels bound up the river, as the tide does not rise to their level.

The following directions for St. John's Harbour and Meogenes Bay are by Mr Backhouse. But it should be mentioned that from Captain Owen's survey it would appear that the passage on the east side of Partridge Island is the best, there being in the other only 7 to 12 feet, and some shoal spots of less water at low tide.

"When you make Meogenes Island, or Partridge Isle, so as to be distinguished from the lighthouse on the latter, then make a signal for a pilot, and the intelligence from Partridge Island will be immediately communicated to the city of St. John, whence a pilot will join you. Should the wind be contrary, or any other obstruction meet you, to prevent your obtaining the harbour that tide, you may sail in between the S.W. end of Meogenes Island and the main, or between the N.E. end and the main, and come to anchor in 4 or 5 fathoms at low water, mud and sandy bottom. The mark for the best anchoring ground here, is, to bring the three hills in the country to the N.E. in a line within Rocky Point Island,* and the house on Meogenes Island to bear S.E. by S.

"Should the tide of ebb have taken place at the beacon, you must not, by any means, attempt to gain the harbour that tide, but wait the next half-flood, to go over the bar, as both sides of the entrance of this harbour are nothing but sharp rocks, dry at low water; and the tide of ebb is so rapid in the spring, when the ice and snow are dissolved, that all the anchors on board will not hold the ship from driving.

"On the Nova Scotia side of the Bay of Fundy, your soundings will be from 50 to 60, 70, 80, to 95 fathoms; stones like beans, and coarse sand; and as you draw to the northward, the quality of the ground will alter to a fine sand, and some small shells with black specks. Approach no nearer to the south shore than in 50 fathoms; and, as you edge off to the N.W. and W.N.W., you will fall off the bank, and have no soundings.

"When you have passed Meogenes Island, edge in-shore toward Rocky Point, until Meogenes Point (*Negro Head*) is in a line over the N.W. corner of Meogenes Island; sailing in between Rocky Point and Partridge Island, with these marks in one, will lead you in the best water over the bar, (15 feet,) until you open Point Maspeck to the northward of the low point on Partridge Island; then starboard your helm, and edge toward Thompson's Point, until the red store, at the south end of St. John's, is in a line over the beacon; keep them in one until you pass the beacon at a distance of a ship's breadth; then haul up N.N.W. up the harbour, keeping the blockhouse, at the upper part of the harbour, open to the westward of the king's store, situated close to the water side, which will lead you, in mid-channel, up to the wharves, where you may lie aground dry, at half-tide, and clean your ship's bottom, or lie afloat in the

* This is an islet, lying at a cable's length from the point, and more properly named the *Shag Rock*. It is surrounded by sunken rocks.

stream at single anchor, with a hawser fast to the posts of the wharves on shore.—N.B. The tide of flood here is weak, but the ebb runs very rapidly all the way down past Meogenes Island."

The following directions are based on the details of the survey of Lieutenants Harding and Kortright, acting under the orders of Captain W. F. W. Owen of the Royal Navy, in 1844.

When running for St. John's avoid the rocky ledge running off Inner Maspeck Point, the eastern side of the entrance, to the distance of $2\frac{1}{2}$ cables' length, and which is steep-to, with 30 to 40 feet close off; and having brought the stone barracks in one with the Wesleyan Chapel,† at the back of the town, bearing N. $\frac{3}{4}$ E., steer in with this mark on, and it will carry you outside of the shoal water extending from the eastern side of Partridge Island. When Carleton Church comes in one with the cliff end, (the termination of the cliffs forming Negro Point) bearing about N.W. $\frac{3}{4}$ N., you must change your course to this direction, and it will lead you in from 15 to 22 feet at $1\frac{1}{2}$ cable's length to the northward of the shoal ground extending between Partridge Island and Negro Point. Continue in this direction until the stone church at the back of the town comes on the end of the breakwater, when you must run up with this mark past the beacon-light into the harbour. When just above the beacon-light steer N. by W. or N. by W. $\frac{1}{4}$ W., and anchor off the town. Be careful to keep the lead going when following these directions, that you do not strike on the shoal spots.

To the north-eastward of the beacon-light, and just off the town is a ridge of rocks which is covered at 2 hours flood. From this ridge, and eastward of the town, there is an extensive flat of mud and sand which dries at low water: this extends along the coast to Cranberry Point, and runs about 2 cables' length from the shore. Cranberry Point is cliffy, and has some rocks running off it.

It is high water on the days of full and change at 11h. 44m.; spring-tides rise 23 to 25 feet, and neaps 21 to 23 feet.

Signals.—The following signals are displayed at Partridge Island, on the approach of vessels to the harbour of St. John:—

One ball close for one square-rigged vessel.
One ball half-hoisted, for two square-rigged vessels.
Two balls close, for three ditto.
Two balls separated, for four ditto.
A pendant of any colour, for five ditto.
A pendant under a ball, for six ditto.
A pendant over a ball half-hoisted, for seven ditto.
A pendant under two balls close, for eight ditto.
A pendant under two balls separated, for nine ditto.
A flag of any colour, for ten or more ditto.

The above are displayed at the east or west yard-arm, according to the direction in which the vessels are at first observed; and as soon as their rig can be distinguished, descriptive colours will be hoisted at the mast-head, in the following order:—

An union jack, with a white pendant over, for a small armed vessel.
A blue pendant, for a merchant ship.
A red ditto, for a merchant brig.
A white and blue ditto, for a foreign vessel.
A white ditto (without a ball), for a top-sail schooner or sloop.
A red flag pierced white, for a steam-boat from Saint Andrew's and Eastport.
A ball at the mast-head, vessel is on shore or in distress.

Should immediate aid be necessary, guns to be fired. In foggy weather, a gun will be fired in Partridge Island in return for each heard at sea. Should a vessel require a pilot, her descriptive pendant will be displayed at a yard-arm, in the place of a ball.

In regard to the time for going through the Falls, near St. John, it may be mentioned that the Falls are level (or still water) at about $3\frac{1}{2}$ hours on the *flood*, and about $2\frac{1}{2}$ on the *ebb*, which makes them passable four times in twenty-four hours, about 10 or 15 minutes each time. No other rule can be given, as much depends on the floods in the River St. John, and the time of high water or full sea, which is often hastened by high winds, and in proportion to the height of them.

To the W.S.-westward of Meogenes Island is Flat Bay, in which the depth is 5 and

† This building will be known by its octagonal tower with a circular top. It is situated in the N E. part of the town.

4 fathoms water. It is a small harbour occasionally used by coasters. From hence the land runs nearly W.S.W., passing Negro Head, and Halfway Point (on which is a white horizontal stripe, about 5 feet broad, and which appears to be 40 feet long), to Cape Musquash, which is 9 miles from Partridge Island. Close off Cape Musquash is the Split Rock, with 8 fathoms very near it; this rock is marked by seven white balls, six of which are distinctly visible at a distance of 10 or 12 miles.

MUSQUASH HARBOUR lies about a mile to the westward of the Split Rock; its entrance is about half a mile wide, and there is good anchorage a little way in, with 4 fathoms water; but farther on a bar runs across the harbour, over which is only $1\frac{1}{2}$ fathom. Small vessels sometimes pass to the westward of the islands, and run up the river, which, when past the bar, has 2, $2\frac{1}{2}$, and 3 fathoms water. This harbour is open to the southward.

On Musquash Inner Head, to the westward of the Split Rock, is a white vertical stripe, visible from the westward, with two of the balls on the Split Rock; but on coming up the bay, when the stripe is lost sight of, the whole of the balls on the Split Rock are seen. Besides the above there is a beacon on Gooseberry Island with the letters G I marked on it, and the top of the pinnacle painted white. The white mark can be seen at some distance from the S.W., but the letters are only visible when the island bears N.

From the entrance of Musquash to Point Lepreau, the coast runs to the westward nearly 10 miles, and is irregular, with a few inlets; the first of which is about $1\frac{1}{2}$ mile to the westward of Musquash western point, and is of no note whatever; in your way to it, a berth must be given to the shore, particularly about Musquash Point, on account of some rocks lying off that part; there are channels between these rocks, but few vessels will venture through them.

Besides this inlet there are Chance and Little and Great Dipper Inlets, but they are of little use, and too difficult of access to be run for. From hence to Point Lepreau the coast is high and broken, and must be avoided on account of the rocks lying off it.

On Point Lepreau there is an octagon-shaped building, painted red and white in horizontal stripes, which shows two fixed lights, vertically, at 81 and 53 feet above the sea, visible 15 miles. The range is about two-thirds of the circle from W.N.W. round by south to E. by N. A gun is fired to answer signals. The building bears from the easternmost Wolves E. by N., distant 11 miles: its position is lat. 45° 3′ 50″ N., and long. 66° 27′ 30″ W.

Westward of Point Lepreau, and between it and Red Head, is Maces Bay, in which are numerous islets and rocky ledges, so that it is a place rather to be avoided than frequented.

On its eastern side is a rocky ledge running out from the shore full $1\frac{3}{4}$ mile in a S.W. $\frac{1}{2}$ S. direction, which dries at low water. It may be cleared on the south side by bringing the lighthouse on Cape Lepreau to bear S.E., and on the west side the Brothers Islets N. by E.; these marks will avoid the ledge in 13 fathoms, and it must not be approached nearer, as it is steep-to. At the head of the bay is Mink Island, within which is anchorage for small vessels.

At the back of Maces bay is Lepreau Bay and River, in which is good anchorage in 4 or 5 fathoms, and shelter from the south-eastward; here are some saw-mills at which deals are cut. In running for this place avoid the rocky ledge previously mentioned, and enter the bay, passing the Brothers Islets on the west side. From the Brothers a ledge runs to the eastward joining the shore.

W. by S. from Point Lepreau, distant $3\frac{1}{3}$ or 4 miles, there is stated to be a shoal, of which the actual situation is not known; if such should exist, it must be surrounded with very deep water, for a short distance from its presumed position there are 26, 28, and 31 fathoms, mud, mud and sand, and gravel.

Beaver Harbour lies 7 miles to the westward of Red Head; between is a small place named Seely Cove, in which small vessels may occasionally anchor for a short time. Beaver Harbour is an excellent place to run for when caught by an easterly wind in the bay, and unable to fetch St. John's Harbour, as it is above a mile wide at the entrance, with 10 fathoms water on each side, and 20 fathoms mid-channel, and there are no dangers at the entrance going in. In entering, keep the western shore aboard, until you bring the Goal Rock to bear East, distant about half a mile, where you may anchor in 4 or 5 fathoms, good holding-ground. There are no regular pilots, but the fishermen on the coast are well qualified for the task; although, in clear weather, they are not absolutely necessary.

WOLF ISLANDS.—The Wolves are from 60 to 100 feet high, and may be passed on either side, there being deep water close to them; but they afford no sheltered anchorage, except for small vessels in summer time. With light winds, a lee-tide, or thick weather, you may let go anchor anywhere between the Wolves and Beaver Harbour, in good holding ground, with a depth of 20 to 25 fathoms.

GRAND MANAN.—This island is 11 miles in length and 5 in breadth. On its western side the cliffs are nearly perpendicular, and about 600 feet above the level of the sea. On this side is but one little inlet, named the Dark Cove, which affords shelter for boats only. The Northern, or Bishop's Head, is abrupt and bold; but on its western side there is anchorage in a place named Whale Cove, situated between Swallow's Tail and the North Point; here vessels frequently ride during southerly gales to await the turn of the tide in from 15 to 25 fathoms; but it must not be resorted to in northerly gales.

Long Island Bay lies to the south-eastward of Whale Cove, and is formed by the Swallow's Tail, which is a bold, high, ragged, and barren-looking point, and Long Island, which bears nearly south from it, distant $1\frac{1}{2}$ mile. The bay is open, but possesses all the advantages of a harbour; the bottom is wholly of mud, excepting a ridge of rocks and gravel that extends from the ledge, which shows itself within the Swallow's Tail and the north end of Long Island; there is also a small cluster of sunken rocks, of 5 feet at low water, at half a mile from Long Island Point. In the northern part of the bay the bottom is a stiff clay, and vessels have frequently been protected during a severe gale. Under Long Island, and opposite the beach, ships may anchor, even locking in the north end of Long Island with Swallow's Tail, on a strong muddy bottom, entirely sheltered from the wind and sea.

Off the eastern side of Grand Manan, about half-way down, and at a mile from shore, is Great Duck Island, under which is good ground; but a pilot is necessary, as there are hidden dangers in the vicinity. To the south-westward and southward of Duck Island, lie Ross, Cheney, and White Head Islands: on the latter resides, or did reside, an able and active pilot. These islands are connected together by a sandy and rocky reef of foul ground, which extends S. $\frac{1}{2}$ W. to the Diamond Rocks. At the western side of Ross Island is part of what is named Grand Harbour, a shallow muddy basin; it is a convenient place for ships without anchor or cable, as vessels may enter and lie securely on mud. At the entrance are from 4 to 7 fathoms, clayey bottom. The channel is narrow, but secure from the sea.

The Green Islands lie a little to the westward of White Head Island; and to the southward of the Green Islands, about one mile, are the Three Kent Islands, which are low and ledgy. The eastern side of the largest is bold to the rocks, which are at all times visible. Off the N.W. of these rocks is a ledge named the Constable, dry at low water. Under the lee of these and the Green Island, occasional anchorage may be obtained in from 14 to 7 fathoms.

Wood Island lies off the southern part of Grand Manan, and forms an excellent harbour with the S.W. Head of the latter. The upper part and head of it, in a gale of wind, are places of security; and here supplies, if requisite, may be obtained from the inhabitants.

THE MANAN LEDGES.—The outer and most dangerous of these is the Old Proprietor, covering a space of half an acre at low water, and drying at half-ebb; but when covered, the tide sets strongly over it. It lies S. $\frac{1}{2}$ E., $9\frac{2}{3}$ miles, from Great Duck Island; S. by E., nearly 7 miles, from the north-eastern part of White Head Island; E. $\frac{1}{4}$ S., $6\frac{1}{4}$ miles, from the Gannet Rock; S.E. by E., 4 leagues, from the S.W. Head of Manan; N.N.W. $\frac{1}{2}$ N., $18\frac{1}{2}$ miles, from Bryer Island Lighthouse; and N.N.W. $\frac{1}{4}$ W., 18 miles from the northern entrance to the Grand Passage.

The Clerk's Ground, a rocky shoal, of $4\frac{1}{2}$ fathoms, lies about $2\frac{1}{4}$ miles, N.E. $\frac{1}{2}$ N. from the Old Proprietor. At $1\frac{2}{3}$ mile, N.W. by N. from the Old Proprietor, is Crawley's Shoal, of 7 feet only; and at $1\frac{1}{2}$ mile, west of the Crawley, is the Rans, of 5 feet. At 4 miles, N. $\frac{1}{2}$ E., from the Old Proprietor is situated the Roaring Bull; and although it has 6 or 8 fathoms over it, there is usually a heavy and dangerous ripple. The mark to go clear to the eastward of all these dangers is, the north-easternmost high land of Manan well open of the Long and Duck Islands; and to the southward of them, the south-west head of Manan open of Kent's Three Islands. During an easterly wind the tide-rips are impassable. Here are also other rocks within the above, a range of which lie south of the south-west point of White Head Island; some of these have deep water between them, and occasion a ripple 3 miles from the shore: these are named

the Tinker, Three Diamonds, Rans, besides which there are many others without names, both above and under water.

Nearly one mile, S.S.E. ½ S., from the southern point of the Three Islands, is a dangerous knoll named the Kent, having only 7 feet water over it. It bears about W.N.W. ½ W. from the Rans, and is not included within the confines of the mark given to avoid the dangers to the southward, viz., the S.W. head open of all the islands. Another danger is said to lie S.E. ⅓ S. from Kent Knoll, distant 2 miles, and W.S.W. ⅝ S., 1¼ mile, from the Rans; but this is doubtful.

The Gannet Rock is a small rock about 40 feet high, and having many sunken rocks and ledges about it, standing at the distance of 3½ miles, S.S.W., from the Three or Kent Islands. The ledges and sunken rocks in the vicinity always break. The lighthouse on this rock shows a brilliant flashing light appearing for 40 seconds, and succeeded by 20 seconds of darkness. The building is painted in stripes, vertical, black and white, and stands in lat. 44° 30′ 40″ N., and long. 66° 52′ 50″ W.*

Nearly W.S.W. from the Gannet, distant 1½ mile, is St. Mary's Ledge, part of which is always above water; and to the northward of St. Mary's Ledge, a mile, is the Long Ledge, also visible; between and around these are numerous rocky shoals, with deep water between them, rendering this part particularly dangerous. Other reefs are supposed to exist to the westward, and between the Gannet Ledges and the Machias Seal Islands; but their exact positions are not known.

The bearings of the lighthouse from the dangers in the vicinity, as given in the public notice, are as follow:—From the Old Proprietor, which dries at three-quarters' ebb (very dangerous), W. by S. ½ S., seven miles; Black Rock (always above water, 25 feet), off White Head, S.W. ½ W.; South-west Head of Grand Manan, S.E. ½ S.; Northernmost of the Murr Ledges (dry at two-thirds ebb), S.E. by E. ¼ E.; Southernmost of ditto, named St. Mary's Ledge (always out of water), N.E. by E. ½ E.; Machias Seal Islands Lights (distant about thirteen miles), E. by S. ¼ S.

THE THREE MACHIAS SEAL ISLANDS lie W.S.W., about 9½ miles, from the S.W. end of Manan, and are separated by channels of 10 to 30 fathoms water. A sunken rock is said to lie to the north-eastward, between them and Manan, but its exact position is not known, and renders a good look-out necessary when navigating in this vicinity.

On the easternmost Seal Island, in lat. 44° 30′ 3″ N., and long. 67° 6′ 10″ W., are two buildings of a white colour, which bear from each other E.S.E. and W.N.W., distant 200 feet. They both exhibit fixed lights at 48 feet above the sea, visible about 15 miles, and are intended as leading lights for clearing the Murrs and other dangers to the southward of Grand Manan. Vessels standing to the northward and the lights to the westward, 5 miles, when they bring the lights in range, or covering one another, must tack to avoid the Murr Ledges, which bear E.S.E., about 10 miles, from the buildings. A gun is occasionally fired as a warning to vessels. From the circumstance of two lights being shown from the same station they will be easily recognised.

The following have been given as the bearings of the lighthouse. From the southernmost Murr Ledge (St. Mary's), W.N.W. westerly; Gannet Rock Light, W. by N. ½ N., 13 miles; southern head of Grand Manan, W. by S. ½ S.; northern head of Grand

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* The following remarks were annexed to the specification of the lighthouse, issued by the Commissioners of Lighthouses, dated St. John's, 4th October, 1831:—

This light, from its proximity to several very dangerous ledges and shoals, ought not to be run for; it is intended to give timely warning to vessels which are, by the rapid tides about these ledges, frequently drawn into danger, and too often wrecked.

The dangerous shoal named the Old Proprietor, which dries at three-quarters ebb, bears from this lighthouse E. ½ S., about 7½ miles. St. Mary's Ledge, dry at all times, S.W. by W. ½ W., 1¾ mile. Northerly from this ledge, the whole space westerly from the lighthouse, for the distance of 5 miles, is full of dangerous ledges (several of them dry at high water), named the Murr Ledges: the inner or northernmost of these ledges bears from the light W.N.W. nearly, and is dry at two-thirds ebb.

Within the Murr Ledges there is a clear channel round the south-west head of Grand Manan, which bears from the lighthouse N.W. ½ N., about 7½ miles. Black Rock, off White Head Island, bears N.E. ¼ E., about 8 miles. Vessels, except in cases of extremity, ought not to attempt running between this rock and the Old Proprietor, as there are some dangers in the way, the ground rocky, and the tides very rapid.

The S.W. point of the Machias Seal Islands bears from this lighthouse W. ½ S., 12 miles, and the N.E. rock of these islands W.N.W. about the same distance.

Manan, S.W. ½ W.; North-east Rock, distant two miles, S.W. by S.; Little River Head, S. by E.; Libby Island Lighthouse (American), S.E. by E.

At 3½ miles, West, from the Seal Island Lighthouses, is a rock, which has caused the wreck of several vessels. It was seen by a Captain Johnstone, of the ship Liverpool, trading to St. John's, in 1834, and is said to be well known to the regular traders and pilots.

Between Great Manan and the coast, the channel is from 9 to 6 miles wide, with bold shores. The depths quickly increase on each side, from 12 to 70 and 75 fathoms; the greatest depth being near Manan, where are from 70 to 75. This is the best and safest passage up the Bay of Fundy, and most advantageous with the prevalent winds, which are from the westward.

PASSAMAQUODDY BAY with the Chapeneticook, or River St. Croix, divides the British American territory from that of the United States. In November, 1817, the commissioners appointed by the respective governments, under the treaty of Ghent (the last treaty of peace), decided that Moose, Dudley, and Frederick Islands, in the Bay of Passamaquoddy, should belong to the United States; and that all the other islands in the same bay, with Grand Manan, in the Bay of Fundy, should belong to Great Britain. The citizens of the United States were to continue to enjoy the right of navigating through the Ship Channel, between Deer Island and Campobello; and, of course, through the channel between Moose and Deer Islands.

There are three passages into Passamaquoddy Bay, viz., the Western Passage, Head Harbour Passage, or Ship Channel, and Letite, or Eastern Passage. The first is that between the Isle of Campobello and the main land to the S.W.; Head Harbour lies between Campobello and Deer Island; and Letite, or the Eastern Passage, runs in to the eastward and northward of both Deer and Campobello Islands. The passage most commonly adopted by British ships is the latter.

Off the N.E. end of Campobello, and in the middle of the entrance to the bay, is a remarkable islet, named the White Horse, which appears at a distance like a white rock; but it is really a small islet, barren and destitute of trees, while the islets about are covered with them; it, therefore, serves as a beacon. Close to all round it is deep water of 11 to 20 fathoms. Its position, according to Com. Owen's survey, is lat. 44° 59′ 45° N., and long. 66° 52′ 12″.

Head Harbour lies at the N.E. end of Campobello, and is a place of easy access, small, but perfectly safe, and well sheltered from the eastward and southward by the island of the same name; in it there are 6, 7, and 8 fathoms water, muddy bottom.

On the north-east end of Campobello Island is a lighthouse, painted white with a red cross on it, standing in lat. 44° 57′ 40″ N., and long. 66° 53′ 55″ W. It is 48 feet high, and shows a fixed light at 64 feet above the sea, visible 15 miles. The variation of the compass is about 16° W., and the tides rise 23 feet. The following bearings have been taken from the summit of this lighthouse:—To the east point of Grand Manan (Fish Head), S. 18° E. or S. by E. ½ E.; the south Wolf S. 66° 30′ E. or E.S.E.; the east Wolf (the largest), S. 87° E. or E. ½ S.; Point Lepreau, N. 84° E. or E. ½ N.; the entrance of Beaver Harbour, N. 70° E. or E.N.E. ½ E.; the summit of White Horse, N. 45° E. or N.E., this you leave on the starboard hand; Spruce Island, from N. 6° E. to N. 15° W.; Black Rock, very dangerous, N. 61° 30′ W. or N.W by W. ½ W.; and to Casco Bay Island, N. 33° W. or W. ½ N.

On the west side of Campobello is the harbour of De Lute, which is a fine anchorage for vessels, having at its south-west end a place named Snug Cove. Moose Island, on the opposite side of the channel, belongs to the United States, and British vessels are not allowed to ride there above 6 hours at any one time. A ship of 500 tons may ride, moored head and stern, in a fine cove at the south end of this island, safe from all winds, but the anchors are very much exposed with wind from the east.

QUODDY HEAD is of moderate height, and has a lighthouse upon it 45 feet high, which shows a fixed light at 90 feet above the sea, visible 17 miles. It stands in lat. 44° 49′ 4″ N., and long. 66° 57′ 2″ W., and forms an excellent object when making Passamaquoddy Bay from the southward or westward.

At about a quarter of a mile without Quoddy Head lie two remarkable rocks, named the Sail Rocks, which, at a distance, resemble a ship; to the eastward of these there is a whirlpool. In passing it is requisite to give these objects a berth of a half or three-quarters of a mile before you haul in.

Quoddy Head form the south side of the Western Passage, the entrance of which between Campobello and the Head, is a mile in breadth; but the passage gradually

narrows to the W.N.W., and N.N.W., and at 2 miles up a rocky bar stretches across, which in parts becomes dry at low water. At rather more than a mile within the entrance, you may come to anchor in 4 or 5 fathoms, well sheltered, either by day or night, and can wait for a pilot, who may be obtained, on firing a gun and making the usual signal, who will take the ship to Snug Cove or Moose Island, whence another may be obtained for St. Andrew's, the River Scoodic, or St. Croix, &c.

Large ships, bound into the bay, should pass to the eastward of Campobello, steering N.E. by E. and N.E. towards the Wolves, which lie about 6½ miles eastward from the northern part of Campobello. So soon as the passage between Campobello and the White Horse bears W.N.W., steer for it, leaving the White Horse on your starboard side, and keeping Campobello nearest on board. You will now, proceeding south-westward, leave a group of islands on your starboard side, and will next see Harbour De Lute, above-mentioned.

Between the Wolves and the north end of Campobello there is a depth of from 60 to 100 fathoms. With the latter bearing S.S.E. or S.E. there is a depth of 19 and 20 fathoms, where ships may anchor securely from all winds. The courses thence to Moose Island are S.W. by W. ½ W. and S.W. 5 miles.

If bound from Moose Island up the River Scoodic, as you pass Bald Head, opposite Deer Island, give it a berth of half a mile, as a ledge of rocks lies off it. Having passed this point, the course and distance to Oak Point, or Devil's Head, will be N. by W., 4 leagues. The latter may be seen from the distance of 10 or 12 miles. On this course you will leave to port Fross Ledge, three-quarters of a mile from land, and 6 miles from Bald Head. In the upward course from this, there are some shoal parts, which may be avoided by the lead.

ST. ANDREW'S HARBOUR lies on the eastern side of the River Scoodic, and is formed by a small island named Navy Island, lying off the town, which protects the roadstead from the south-westward. The town is a pleasant little place, and the harbour being good is much visited by vessels for the purpose of loading timber, which is longer, and said to be of a better description than that of Nova Scotia. The merchants of this town also load timber at other places, at Oak Bay, in the Scoodic River, and at Bocabec, Digdeguash, and Magaguadavic in the north-eastern part of Passamaquoddy Bay, all of which are excellent harbours.

Navy Island is pretty bold-to on the south-western side, but shingley flats extend off it towards the town, and nearly join the flats from the main shore, there being only a very narrow passage between at low water. The channel to the north-westward of the island is very narrow at low tide, the flats nearly joining; but at high water, spring-tides, there is a depth of 18 to 24 feet. The channel to the eastward of the island is considered to be the best, and it has been well buoyed and marked; at the narrowest part of the channel is a lighthouse on the town side, which shows a fixed light at 35 feet: here the channel is only 20 fathoms wide, and has a depth at low water of 8 to 14 feet.

St. Andrew's Lighthouse, according to Lieut. Kortright's (R.N.) survey in 1844, stands in lat. 45° 4′ 13″ N., and long. 67° 3′ 48″ W. It is high water, on the days of full and change, at 10h. 50m.; springs rise 24 to 26 feet, and neaps 20 to 22 feet. Variation of the compass 15° 30′ W.

ETANG HARBOUR is situated to the eastward of the northern entrance to Passamaquoddy Bay. The town is built on a small point jutting out from the main land, and the harbour is excellent, there being a depth of 50 to 70 feet at low water, spring-tides, and good shelter on every side. There are two entrances to this harbour, either of which, although narrow, may be taken according to circumstances. To steer in you should have a pilot, as the approach to the town is somewhat intricate. It is high water on the days of full and change, at 11h. 10m.; spring-tides rise 21 to 25 feet, and neaps 21 to 22 feet. Variation of the compass 17° W. in 1847.

TIDES.—Common tides, within the southern passage of Passamaquoddy Bay, rise about 20 feet. At Welsh Pool, in Campobello Island, the tide flows at 10h. 57m., full and change; and runs, when strongest, between Moose Island and Marble Island, and between Deer Island and Campobello, nearly 5 miles an hour. In the Bay, the stream of tide is scarcely perceptible. It is high water on the eastern side of Grand Manan at 10h.; springs rise 25 and 20 feet.

GENERAL REMARKS ON THE NAVIGATION OF THE BAY OF FUNDY.—Ships navigating the Bay of Fundy have to encounter an atmosphere almost constantly enveloped in thick fogs, tides setting with great rapidity over the rocks and

shoals with which it abounds, and a difficulty of obtaining anchorage on account of the depth of water: so that, under these circumstances, the greatest attention is requisite, in order to prevent the disastrous consequences which must necessarily attend a want of knowledge and caution.

When off Cape Sable, with a westerly wind, and destined for the Bay, it is best to make the coast of the United States, about the Skuttock Hills and Little Manan Lighthouse, as you can pass with greater safety to the westward of Grand Manan than to the eastward, and can have shelter, if required, in the several harbours of that coast.

Between Grand Manan and the coast of Maine the passage is free from danger; vessels beating through, generally stand from side to side, particularly in fogs, the depth being from 12 to 70 fathoms, with a bold shore on each side, and the tide through regular and strong. The Wolf Islands may be passed on either side, as there is deep water close-to; but they afford no sheltered anchorage, except for small fishing vessels in summer time. With light winds, a lee tide, or thick weather, you may let go an anchor anywhere between the Wolf Islands and Beaver Harbour, in good holding ground, in a depth of 20 or 25 fathoms. Point Lepreau is bold-to, but was formerly dangerous in dark weather, as it projects so far into the sea. Its lighthouse, with double lights, is now an excellent guide. Hence to St. John's the course is free from danger.

When steering between Grand Manan and Bryer's Island, the utmost caution is requisite during thick weather, as vessels are frequently drawn amongst the islands and ledges to the southward of Manan by the flood setting directly on them: the most dangerous is the Old Proprietor already mentioned, which, at low water, is uncovered for the space of half an acre. When the wind, therefore, veers at all to the southward, make the best of your way to St. John's Harbour, or you may secure an anchorage in Grand Passage or St. Mary's Bay, as it seldom blows in that direction above 18 hours without bringing on a fog.

The prevailing winds here, and on all the coast of Nova Scotia, are from W.S.W. to S.W. nearly as steady as trade-winds; excepting that during the summer months they are rather more southerly, and accompanied with but little intermission by fog, which requires a north-westerly to disperse it. It is, therefore, recommended not to leave an anchorage without making arrangements for reaching another before dark, or the appearance of a fog coming on, which, with a S.W. wind, is so sudden, that you are unawares enveloped in it; nor to keep at sea during the night, if it can be avoided. Whenever the wind blows directly off the land, the fog is soon dispersed.

The tides are very rapid, but regular; and although the wind against them alters the direction of the rippling, and sometimes makes it dangerous, it has little or no effect upon their courses. The flood sets from Cape Sable to the north-westward through the Seal Islands and Bald Tuskets, at 2 or 3 knots in the hour; after which its rate increases to 4 or 5 knots, thence taking the direction of the shore, it flows past Cape St. Mary, and then N.N.W. towards Bryer's Island: it sets but slowly up the extensive Bay of St. Mary, which adds to its strength along the eastern shore; then increasing its rapidity as the Bay contracts, it rushes in a bore into the Basin of Mines and up Chignecto Bay. Between Bryer's Island and the opposite northern coast, and for some distance up the Bay to the eastward, the first of the flood sets strong to the northward (nearly north); so that it will be extremely dangerous for a vessel to run in the night or thick weather, from any part of the southern to the northern coast, without making a large allowance for the set of the tide, and keeping the lead constantly going.

The following note on the Navigation of the Bay of Fundy is by Com. W. Peel, H.M.S. *Daring*.

"The prevailing winds in this Bay during the months of July, August, and September, are from the S.E. and S.S.W., which roll in before them a dense wall of fog that penetrates everywhere, and which is only occasionally lifted by a change of wind from the northward.

"The navigation, therefore, during this period, particularly in the month of August, requires great firmness and caution, but is far from being so dangerous as represented. Unfortunately, from the short summer of the climate, and long severity of winter, the whole activity of trade is compressed into this brief period.

"The northern shore of the bay of Fundy is clear and bold-to, in its whole extent, with several beautiful harbours, and a safe deep passage between it and Grand Manan Island, whilst the Wolf Islands, or the very remarkable rock named the "White

Horse," are a guide against being carried by the tide into the channels that open the Passamaquoddy Waters. A ship, therefore, may with proper precautions, navigate along this shore in perfect safety. It is the passage between Grand Manan Island and the Nova Scotia shore that is really dangerous, but here no ship should attempt to pass without the prospect of clear weather. She may anchor in Bryer's Island Passage, if coming from the northward, or in St. Mary's Bay, if from the south, until an opportunity occurs. To pass through the passage formed by Bryer's Island would at once clear everything; but the tide runs through with great rapidity, and breaks across in a heavy ripple. A rock also exists in the channel, the position of which is not generally known. The *Daring* attempted once to beat through, but the pilot had mistaken the time of tide, and when half way, losing his nerve, he gave up charge. I have no doubt, however, but that it would be of great service to the commerce of St. John's, New Brunswick, to have attention drawn to this passage, as the means of clearing the dangers outside; for there is this other advantage in standing close in to the Nova Scotia shore, which is the reverse on the other side of the bay, that the fog seldom comes close home. For this reason, and also on account of the Bank of Soundings, in coming from the eastward into the Bay of Fundy, I would prefer coming up by the Nova Scotia shore, to standing across for the other side, as recommended in the General Directions.

"The tides in the Bay of Fundy, though extremely rapid, are very regular, and the wind, during these months, seldom blows with violence, or without dispersing the fog in the immediate vicinity of land. The water, also, in the bay above Grand Manan, is smooth, though rendered dangerous to boats in many places from the rippling of the tides.

"I will not attempt to describe the several harbours that the *Daring* visited. A pilot is necessary for a first acquaintance; but nowhere better than in the Bay of Fundy, from the vivid recollection of the land, that is impressed upon the mind by anxious attention, can one so quickly learn to dispense with his services.

"I would recommend a ship stationed in the Bay of Fundy to make Digby, in the Basin of Annapolis, her chief resort. The ship's company can here have liberty without being exposed to the great bribes for desertion offered at St. John's; fresh provisions are cheap and excellent, and water can easily be obtained by the ship's boats without having to purchase it as at the former place. The basin of Annapolis also is more free from fog than any other place, and the entrance is wide enough for a ship to work through."—*Nautical Magazine, December*, 1848.

The following remarks on the "Passage into the Bay of Fundy" are by Mr. R. Leighton, master of the barque *Royal Adelaide*:—

"Our Directors recommend ships bound to the bay to make the Skuttock Hills upon the United States coast, and enter by the Grand Manan channel; one side of which is formed by the main land, and its approach is facilitated by lights and soundings. Where the shores are not bold, and the lead a good guide, the dangers are pointed out by lighthouses in clear weather, and fog signals when it is thick: thus the danger from fogs in this channel is much lessened, and as the assistance of St. Andrew's pilots is generally procurable here, with this local aid detention seldom occurs, when bound to St. Ahdrew's.

"The tides in this channel are regular, and by using it you avoid, by closing with the main land, the rapid tides setting upon Grand Manan and its ledges both ways. It is allowed to be the best channel *into* the bay, but is not much used by St. John's ships. The reasons which they assign, are chiefly, that within the bay the channel for them is on the wrong side. They first object to running to the leeward when approaching the bay with north-easterly winds, which occasionlly continue a considerable time, and they hold to the weather shore, making the Nova Scotia bank of sounding a check in making Bryer's Island; but this is an isolated point, being divided from the main land by St. Mary's Bay, and the guides in approaching it is not equal to those on the other side.

"In the channel there is a ledge upon Bryer's Island side and the Old Proprietor, forming the long projecting point of the Grand Manan Ledges, and they, not being indicated by beacons or lighthouses, render this channel dangerous; the banks are too steep to render soundings a good guide; and the marks upon Grand Manan frequently, even in fine weather, cannot be made out, and there are no guns, or gongs, when you meet with a thick fog. But this passage, with all its faults, is generally used to St John's, because the Nova Scotia side of the bay is more bold and straight than the

other, and the tides more regular; so that in thick weather their effects can be better calculated, whilst upon the other side the freshets, in that season, cause a superficial current, which both upsets any calculation of the tides, and renders the log useless; and, in the lower parts, the rapid tides setting upon Grand Manan, render the calm almost as dangerous as the gale in thick weather.

"But, however, you may avoid tides and currents bound to St. John's, there is no avoiding the dense fogs of the Bay of Fundy; and, in this respect, the position of St. Andrew's gives it a great advantage. It is known that upon the American coasts it is, frequently, a thick fog over the sea, while the land is clear, particularly if the wind be not blowing directly upon the coast, and provided that soundings give sufficient warning, and the wind admits of hauling off, the land may often be approached by the lead, and your position ascertained or even your port gained.

"Whilst the Bay of Fundy is full of dense fog, St. Andrew's Bay, with the islands forming it, and the channels between them, may be all fine and clear. I have laid wind-bound upon Bar Island reef for four days, with the winds south, and south-easterly, and the edge of a dense fog in the bay, running along from Head Harbour to Wolf Islands, while we had fine, clear weather; and ships coming through the Grand Manan channel, and bound to St. Andrew's, emerging from the fog, like coming through a door in a wall, and finishing their passage in similar fine clear weather; but those bound to St. John's must still contend with that formidable danger to this navigation.

"The freshets in the spring of the year, the nearness of the Falls to the town of St. John's, throwing so large a volume of water into that harbour, and the tortuous points of the river, render the current so strong, and produce such whirling eddies, that but a small portion of the river is available for ships to anchor in; and with strong southerly winds a strong lipper comes into the harbour, and their roadstead also, is open to this wind. But whatever natural defects the harbour may have, or whatever obstructions there may be to the navigation in reaching it, the skill and energy of its inhabitants are undoubted; and all must admire the fine model of their ships, and their admirable combinations of sailing and carrying qualities. But nature has been more favourable to St. Andrew's; her capacious land-locked bay guards her fine anchorages. St. Andrew's is a fine harbour, but the anchorage in the stream is rather small, and some of the wharves are dry at low water, but have a fine gravel bottom.

"Chamcock is the best natural harbour that I have ever seen, and I think may challenge comparison with the world. It is completely land-locked, and although it has a rise and fall of 30 feet, yet it is nearly tideless. The high bar of Minister Island which connects that island to the main land only overflowing at high tide. Minister Island forms the outer boundary of the harbour, having the entrance rather narrow, having a spit from each point, (as there are from all points,) but quite safe. They would only require a beacon on them; the anchorage is large, and good holding-ground. I found the bottom foul within 3 fathoms at low water, but a fine line of tidal wharves might be constructed upon the sides of the creek, which brings down the water from a lake at a considerable elevation above the tide level, and which passes through the saw-mill dam. I beg the worthy proprietor's pardon, I should have said that the lake was a reservoir and sluice to the *first* float *dock* in British North America. Nature has in those respects been more favourable to St. Andrew's than to St. John's, and now that it is to be the terminus of the great North American railway, there is a great field open for the skill and energy of her inhabitants to raise her to a flourishing condition; and it is to be hoped that the results of that great work may be good and widely spread; and facilitate both commercial and social improvements in extention."
—*Nautical Magazine*, 1849, page 248.

PASSAMAQUODDY BAY TO CAPE ELIZABETH.

The most remarkable elevations of land between Passamaquoddy Bay and Cape Elizabeth are the Skuttock and Mount Desert Hills and the Hill of Penobscot. The Skuttock Hills are five in number, and at a distance appear to have a round form they lie to the N.N.E. of the Port of Goldsborough, and are readily distinguishable

from any hills to the eastward. The Mount Desert Hills may, in clear weather, be seen from a distance of 15 to 20 leagues. The Penobscot Hills may be seen over the Fox Islands, when bearing from N.W. to N.N.W. When within 4 or 5 leagues of the Mount Desert Hills, the Skuttock Hills will bear about N.N.E.

In sailing towards this coast, the Mount Desert Rock which lies about 6 leagues to the southward of Mount Desert Island, will be seen with its lighthouse, and you must observe to make a proper allowance for the tide. At the Mount Desert Rock the stream of flood divides to run westward and eastward. With the Skuttock Hills N.N.E., and within 5 leagues of those of Mount Desert, the tide of flood sets E.N.E., and the ebb W.S.W.; but, at the distance of 9 or 10 leagues from the land, the current, in general, sets to the S.W. and more westward. From the Mount Desert Rock to the Fox Islands the flood-stream sets W.S.W. along the shore; but it still runs up to the northward into Blue Hill Sound, Isle au Haute Bay, &c.

MOUNT DESERT ROCK.—This rock lies 15 miles S. 12° W., from Baker's Island Lighthouse, in lat. 43° 58′ N., and long. 68° 8′ 30″ West, and is of small extent, with a lighthouse on it, showing a fixed light, at 56 feet above the sea, visible 15 miles. At the distance of 3,614 feet, S.W. by S., from the rock, is a ledge of 3 fathoms, named the Columbia Ledge, from the name of the ship commanded by Captain Owen, R.N., who surveyed it, close-to inside of which are 22 fathoms, and outside 17 to 30 fathoms.

MACHIAS BAYS.—In sailing along the coast from Passamaquoddy Bay to Machias Bays, you will see an opening named Bayle's Mistake, at about 5 miles from Quoddy Head, which is a place of no note. Soon after seeing Bayles' Mistake, you will open Moose Cove, a cove only fit for boats; and beyond this, at about 6 miles, is Little River Harbour, the entrance to which bears N.W. by W. ½ W., about 4 leagues, from the south-west head of Grand Manan, and N. by W., 3 leagues, from the western Seal Island. This harbour cannot be seen until you approach the northern shore, and it is said that you should not run in for it before it bears N.W. or N.N.W. There is a bluff point of rocks on the starboard hand, going in, and an island in the middle of the harbour. On going in, leave the island on your port side, and when you have passed it half a mile, you may anchor in 4 or 5 fathoms, muddy bottom, and be protected from all winds. The land between this harbour and Quoddy Head, trends N. by E., 4 leagues.

On the island, at the entrance of Little River Harbour, is a lighthouse, bearing a fixed light, at 23 feet, visible about 10 miles. When the lights on the Seal Islands bear S. by E., this light is opened, and appears of a red colour.* In running into the harbour, be careful to keep the island on the port hand and close to board.

At 2 miles to the westward of Little River Harbour, is the entrance to Little Machias Bay, which has several rocky islets before it; but these are nearly in the centre as you enter, and have 8 and 12 fathoms close to them, and as they are always visible, they are, therefore, less dangerous. The bay runs in N.N.W. ½ N., and has anchorage on the port side, in 5, 4, 3, and 2 fathoms, but open to the south-eastward.

Cross Island lies 2 miles farther to the S.W., and is about 2 miles in extent, being separated from the shore by a narrow channel. It forms the eastern boundary of Great Machias Bay.

The entrance to Great Machias Bay bears N.W. ¾ W., 14 leagues, from Bryer's Island Lighthouse, N.W. by W. ½ W., 22 miles, from Gannet Rock Lighthouse, and N.W. ½ W., 10½ miles, from the lighthouses of the Machias Seal Isles. The Machias Seal Isles and Gannet Rock are nearly true East and West from each other, at the distance of 12 miles, and several dangerous ledges lie between them.

Directly fronting the entrance of Machias, within the distance of a league, are two small islets named the Libbee or Liby Isles, on the southernmost of which is a lighthouse exhibiting a fixed light, elevated 60 feet above the level of the sea, visible 15 miles. At a league, N.E. ½ N., from this lighthouse is the S.W. end of Cross Island, previously mentioned.

In sailing for this bay from the Seal Islands, and steering N.W. ½ W., you will gain sight of the Libbee Isles' Lighthouse, which is to be left on the port side; rounding these isles you thence proceed North into the bay. On this course you will leave a large white rock, named the Channel Rock, on your port side; and, unless bound upward into Machias Harbour, you may haul to the westward. When you have

* We have been informed that this is a bright light, and does not appear of a red colour at all. The above description is copied from a newspaper paragraph.

advanced half a mile above this rock, bring a high round island, covered with trees, to bear North, when you may anchor in 4 or 5 fathoms, muddy bottom. If you mean to go up to the town of Machias, keep on a north course, until you have advanced above a high round island on your port hand, when you may steer W.N.W., or N.W. by W., for a point covered with birch-trees, and having a house on it. On the starboard hand there are flats and shoals. You may keep on the port hand after you pass this house, until the river opens to the northward, when you may run up to Cross River, and anchor in 4 fathoms.

The course and distance from Machias Bay to Gouldsborough Harbour may be best ascertained by a reference to the chart. In proceeding between these places, you will pass numerous islands on the starboard hand, with many inlets and good harbours, but generally too intricate for strangers to attempt with safety. On quitting Machias Bay, you first pass the Libbee Islands, then Head Harbour Island, the Wass Islands, &c. The course and distance from off the Libbee Islands to a berth off the Great Wass Island are S.W. by W., 10 miles, and from the latter to the Little Manan Isle W. by S., 13⅓ miles.

On the S.E. point of Head Harbour, or as it is perhaps better known by the name of Mistake Island, off Moospecky Beach, is a lighthouse, which exhibits a revolving light, and is, therefore, readily distinguished from the light on the Libbee Isles, 8 miles to the N.E., and that on Petit Manan, 5 leagues to the south-westward. At the distance of 6 or 7 leagues, the interval of darkness will be longer than the duration of light; but, on approaching, the time of darkness will diminish, and that of light increase. Within the distance of 5 or 6 miles, there will still appear a small interval of darkness; but, in the revolutions, the greatest power of light will be to the least as 24 to 1.

On the north side of Petit Manan Island is a lighthouse of stone, which exhibits a fixed light at 53 feet above the level of the sea, although the building itself is only 25 feet. From this lighthouse the entrance of Gouldsborough Harbour bears N.W. ¾ N., 4½ miles.

GOULDSBOROUGH HARBOUR.—The Skuttock Hills, already mentioned, form a good mark for Gouldsborough, as they lie to the N.N.E. of the harbour. Hence, by bringing them in that direction, and steering on that course, you will, on approaching the harbour, see the Petit Manan lighthouse, which is to be left on the starboard hand. The latter stands at about a league to the southward of the point between Dyer's Bay and Pigeon Hill Bay. At the entrance is an islet covered with trees on the eastern, and two on the western side. Within the entrance the harbour is a mile wide, and you may anchor in from 4 to 6 fathoms, where you please. The course in is N.N.W., then N. ½ E., 4 miles, when you may anchor in 3 to 4 fathoms, safe from all winds, on a muddy bottom. At the town of Gouldsborough is a fixed light.

From Petit Manan lighthouse, Moulton's Ledge, which dries at low tides, bears W. by N., distant 4 miles; Jackson's Ledge, or Eastern Rock, on which there are 12 feet at low water, bears East, 4 miles; the S.E. Rock, on which are 7 feet, bears S.E. by S., 4 miles; and a ledge of 16 feet bears from it S.S.E., 2 miles. Petit Manan Island is almost connected with the shore by a bar, which dries with the ebb.

From Petit Manan lighthouse to a berth off the Great Wass Island, already noticed, the course and distance are E. by N., 13⅓ miles; and from the latter to the Libbee lighthouse, off Machias Bay, N.E. by E., 10 miles.

Pleasant River lies to the east of Gouldsborough. On Nash's Island, at the entrance, you will observe its red light, which must be left on the starboard hand in going in. Coming from the westward you must leave Petit Manan Island on the port hand, at the distance of about half a mile; steer then N.E. for 10 miles, which will carry you up with Nash's Island light, leaving it on your starboard hand at the distance of one-fourth of a mile, when you must steer N.E. by E., 2⅓ miles, which will take you into Tibbett's Narrows. These narrows are formed by Tibbett's Island on the N.W. side, and on the S.E. side by Ram Island. This passage is a quarter of a mile wide; from the middle of which you must steer N.E. ½ E., one mile, which will bring you up with Shabby Island, leaving it on your starboard hand at the distance of one-eighth of a mile; and when half a mile above it, you may anchor in from 5 to 6 fathoms, good holding-ground, Shabby Island bearing S.W. by S. Coming in from sea, and to the eastward of all the shoals and ledges, bring Nash's Island light to bear N. by W., and run up for it, taking care not to approach the southern end of the island nearer than half a mile, as there is a sunken ledge fully one-third of a mile from the shore. It is

perhaps safer to trust to a pilot here, as well as in the other harbours on this coast.

On Nash 's Island, at the entrance of Pleasant River, there is a lighthouse, 47 feet above the level of the sea, contsining a fixed red-coloured light, which you leave on your starboard hand going in. The following are the bearings and distances from Nash's Island light of the following rocks and ledges, viz. :—Black Rock (always above water), S.E. by S. $\frac{1}{2}$ S., $3\frac{1}{2}$ miles; Jourdan's Outer Ledge, which is covered at high water, S.W. by W. $\frac{1}{2}$ W., 4 miles.

DYER'S BAY.—Immediately to the eastward of the entrance to Gouldsborough Harbour is Dyer's Bay, which you may enter by giving Petit Manan a berth of half a mile, leaving it on the starboard hand. If you bring the light to bear N.E., at three-quarters of a mile, a N. by W. course will carry you into the mouth of the bay, leaving a large dry ledge on the port hand; when abreast of this ledge, which is bold-to, give it a berth of 15 or 16 fathoms, then steer N. $\frac{1}{2}$ E., about 4 miles, where you may anchor, safe from all winds, in 4 or 5 fathoms, muddy bottom.

BOWBEAR HARBOUR lies a little to the westward of Dyer's Bay. In coming from the westward, and bound for Pigeon Hill or Bowbear Harbour, bring Petit Manan light to bear N.E., and run for it, giving it a berth of a quarter of a mile, and then steer N. $\frac{1}{2}$ W., about 4 miles. In steering this course you will leave the Egg Rock on your starboard hand, when you will make the westerly shore, giving it a berth of half a mile; then steer N.N.E., a mile, when you will bs opposite Dyer's House, where you may anchor, in 3 fathoms, safe from all winds.

MOUNT DESERT ISLAND forms the northern side of the passage to Bear Island, and may be known by several hills upon it. This island is about 15 miles long from north to south, and 12 broad; it is nearly divided by a small rivulet named Soames Sound, at the head of which is the village of Eden. At the entsance of Soames Sound are two good harbours, named the N.E. and S.W. Harbours.

Bear Island lies nearly in the centre of the passage between Sutton's Island and Mount Desert Island; it is a small island, covered with spruce-trees. A lighthouse stands upon its western end, which shows a fixed light at 65 feet above the level of the sea, and visible from 12 to 15 miles in clear weather.

Baker's Island and Cranberry Island form the western side of the entrance of the passage to Bear Island, and are covered with spruce-trees. Baker's Island light is situated near the centre of the island, elevated 70 feet above the level of the sea, exhibiting a fixed light, visible, in clear weather, at the distance of 15 miles.

Mount Desert, Eastern Pass.—In coming from the westward, and intend going into Mount Desert, bring Baker's Island light to bear North, and run for it, leaving it on your port hand. After passing it, steer N.N.W. until the light on Bear Island bears W.N.W., and run direct for it. In running this course you will leave Sutton's Island on your port hand. The shores around this island are very bold, and you may near it within one cable's length; it lies near the centre of the passage, but the best water is to the northward of it. If you wish to go to the westward of it, when between Bunker's Ledge and Cranberry Island, steer W. by S., until Sutton's Island eastern point bear's N.E.; you can then anchor, or run farther in, into Hadlock's Harbour, to the south of you, or steer W.N.W., about 2 miles, for S.W. Harbour.

BUNKER'S LEDGE, on which is built a stone-beacon, with a cask placed on a staff in its centre, bears from the eastern end of Sutton's Island E. $\frac{1}{2}$ N., about a mile, which you leave on your starboard hand. When approaching this ledge, you may near it to within 2 cables' lengths. When the light on Baker's Island is entirely obscured behind the eastern point of Cranberry Island, you are then to the westward of Bunker's Ledge; and if you have a head wind, you may run to the northward until the light on Bear Island bears W. by N.

In running for Bear Island light, you may approach Bunker's Ledge within a cable's length, leaving it on your starboard hand, and after passing the light about a quarter of a mile, may anchor in 12 fathoms water, with the light bearing from East to E.N.E., good holding-ground; or you may run for N.E. Harbour, about a mile to the northward of the light. About half a mile to the N.W. by W. of Bear Island light there is a *ledge*, bare at low water, having on its western edge a spar-buoy, painted black, which you leave on your starboard hand; this ledge bears from the centre of N.E. Harbour S. $\frac{1}{2}$ W.

Bunker's Ledge bears from Baker's Island light N. by W., distant about 4 miles. Bear Island light bears from Bunker's Ledge W. by N. $\frac{1}{2}$ N., distant about three miles. The middle of Cranberry Island bears from Bunber's Ledge S.S.W., distant $1\frac{1}{4}$ mile.

Baker's Island and Cranberry Island, as before stated, form the western side of the entrance of the passage to Bear Island. A bar extends from Baker's Island to Cranberry Island, which is covered at high water; this opening is often mistaken by strangers for the passage into Cranberry Island Harbour. You must always recollect, that before entering Cranberry Island Harbour, the light on Baker's Island will be entirely obscured behind the eastern point of Cranberry Island. You may go in on either side of Bunker's Ledge, but strangers should leave it on the starboard hand. Between Herring Cove and Bear Island light, near the north shore, are several rocks and ledges, covered at high water.

The S.W. Harbour of Mount Desert.—This is one of the best harbours on the coast; as many as 400 vessels have been at anchor at one time here. To run in, if coming from the westward, when up with Long Island, steer N.N.E., 6 miles, (leaving the Two Duck Islands on your starboard, and the Three Calf Islands on your port hand); this will bring you up midway between the Great Cranberry Island and Mount Desert: steer up midway, until you open S.W. Harbour, when you may haul in (keeping nearest the starboard hand, on account of a ledge on the port hand, which runs off half a mile,) N.W. or W.N.W., and anchor, in 5 or 6 fathoms, muddy bottom, safe from all winds. It is high water at 12 o'clock; tides rise 12 feet. It is not safe for a stranger to run in here at night, on account of the ledge.

A rock lies off the S.W. point of Cranberry Island, bearing West, distant three-quarters of a mile. The eastern passage into S.W. Harbour is situated between Bear Island (on which there is a fixed light,) and Sutton's Island; after having passed these, you may run until you get the harbour open, then follow the above directions.

FRENCHMAN'S BAY lies to the north-eastward of Mount Desert, and to the westward of Gouldsborough, and with its three islands is the western opening between Skuttock Point and Mount Desert Island; its entrance is wide, and within are Mosquito Harbour, Flander's Bay, Taunton and Skilling Rivers, and the town of Sullivan. On the port side is Egg Rock, near which are several islets; but of the particulars of this extensive bay, we possess no accurate information. On the opposite side of the entrance to Frenchman's Bay, are the Cranberry Islands; these are situated on the south-eastern side of Mount Desert Island; and to the S.S.E. of these are the Duck Islands.

BLUE HILL SOUND is to the S.W. of Mount Desert, running up to Union River. If you are bound here, as soon as you are past Long Island, you will open a large sound to the N.N.W., which course you are to steer 6 or 7 leagues, when you will be up with Robertson's Island, leaving the Ship and Barge on your port hand. Robertson's Island is the only island near that place that has a house upon it. The south part of that island is clear of trees, on which the house stands. When you come near the south part of the island, give it a berth of three-quarters of a mile, as there are several sunken rocks off the point. When you bring this island from S.W. to N.W., you may anchor in 6 or 7 fathoms water, muddy bottom; but if you are bound to Blue Hill Bay, you may stand to the northward direct for the Blue Hills, which you may see 10 or 15 leagues distant. If bound to Union River, you should take a pilot at Robertson's Island, as it is not prudent for a stranger to go further without one.

BASS HARBOUR.—This harbour lies at the south-western side of Mount Desert, immediately opposite Burnt Goat Island. When you leave this harbour, bound to the north-westward, steer out S.W. till you bring the bar of Bass Harbour to bear S.S.E., on which bearing steer and keep the port hand best on board. This bar has not water enough for a loaded vessel before half tide, having $8\frac{1}{2}$ feet only at low water; but a light or small vessel may go over at low water, keeping the port hand best on board. When you get over this bar, you steer E. by S. till you bring the S.W. entrance of Mount Desert to bear N.E., on which bearing you may run, leaving Cranberry Island on your starboard hand. But this passage is shoal at low water, and not fit for loaded vessels to go through; but at full tide there is water enough, if you keep the middle of the passage. Continue your course to the N.E. till you pass Cranberry Island; then you may steer E.S.E. and anchor between the two Cranberry Islands, where you will be safe from easterly or S.W. winds. You may lie in from 4 to 7 fathoms, good holding-ground.

When you leave this port bound to the eastward, you steer E. by S. till you get up with Baker's Island light, which lies to the eastward of the Cranberry Islands; then you steer E. by N., 4 leagues, to Skuttock Island. When you pass said island, and are bound to Gouldsborough, you must steer N.E. about 5 leagues, and keep that course

till you bring Gouldsborough Harbour to bear N.N.W.; then you must leave three islands on your port and one on your starboard hand, and run into the harbour, where you may lie safe from all winds, and anchor in 5 or 6 fathoms.

ISLE-AU-HAUT.—To the south-westward of Mount Desert is the Isle-au-haut, a remarkable land, composed of high, steep cliffs, which has a large bay on each side of it, and good landing on its eastern end, with anchorage half a mile off, in 18 fathoms, with the low point bearing N.E. by N., where there is a stream of water falling into the sea. The highest part of the island is in the middle, and presents the appearance of a saddle.

PENOBSCOT BAY.—This is one of the largest and most important bays in the northern provinces of the United States, and contains the most easily accessible anchorages of the whole coast between Cape Cod and the Bay of Fundy. At the head of the bay is the River Penobscot, which collects its waters in the northern part of the State of Maine, at about 200 miles from the coast: this river runs through several lakes in its course, and afterwards unites with what is named the Eastern Branch, and then taking a southerly direction, it falls into the sea. Near the outlet of this river is the town of Bangor, situated at about 50 miles from the sea, and which is accessible to vessels of about 30 tons burthen.

In Penobscot Bay are various islands, the principal of which are Long Island, opposite the port of Castine, and the Fox Islands more at the entrance of the bay; this latter group of islands occupies an extent of about 10 miles, and, together with Isle-au-haut, form what is termed Isle-au-haut Bay. Outside the entrance of Penobscot Bay are Metinicus, Wooden Ball, Seal, and other islands, the exact locality of which can be best seen by a reference to the chart.

Off the south-western side of Isle-au-haut is the Saddle Back Ledge, a high black rock, somewhat resembling a saddle, on the S.E. end of which is a lighthouse, built of granite, 32 feet high, which shows a fixed light at 62 feet above the sea, visible about 15 miles. From this light Isle-au-haut bears S.E. by E. $\frac{1}{2}$ E., $2\frac{1}{2}$ miles distant; Seal Island, S. by W., about 10 miles; Wooden Ball Island, S.W. by S.; Metinicus Island, S.W. $\frac{1}{4}$ W., 12 miles; Brimstone Island, W. $\frac{1}{2}$ N., 2 miles; Little Isle-au-haut Harbour, N.E. by E. $\frac{1}{2}$ E., 6 miles distant; Eagle Island light, North, distant about 15 miles; and Fox Island Thoroughfare, N. by W., distant about 8 miles. At about 2 miles, N.W. by W., from the light is a small sunken ledge, which breaks at low tides, with a little motion of the sea.

The Metinicus Islands lie to the southward of the Fox Islands, directly before the entrance of Penobscot Bay, and have between them a passage of 30 to 36 fathoms water. To the eastward of these islands, about 6 miles, is the Seal Rock, and between is another rock to the south-eastward. The outermost of the Metinicus group of islands is the Wooden Ball Rock, which is distant 7 miles, N.N.E., from the Metinicus Lighthouse. This group of islands should not be approached too closely until surveyed, and there may be some dangers not yet discovered.

On a rock, a little to the southward of the larger Metinicus Island, there are two fixed lights, at 82 feet above the sea, visible about 20 miles; from these lights Seal Island bears N.E. by N., distant 4 miles. It is said that when you are sailing along the coast in a N.E. and S.W. direction, these lights will appear separate, but when sailing N.N.W. and S.S.E. they appear in one; hence they will be open when you are approaching Penobscot Bay.

Isle-au-haut Bay.—In making the lighthouse on Saddle Back Ledge, bring it to bear from N.W. by N. to N. by W., and run it close aboard, leaving it on your port hand. If bound up the bay, bring the light to bear South, and steer North for the light on Eagle Island, which you may near within one cable's length, by leaving it on your port hand. After passing Eagle Island light, steer N.N.W., about 8 miles, which course and distance will bring you up with the Channel Rock,* which you leave on your starboard hand. Give it a berth of one-eighth of a mile, and steer N. by E., about 10 miles, for Dice's Head light. In running this course you will pass Cape Rosier, a high bluff, which you leave on your starboard hand.

To the westward of the Metinicus Islands are the Green Islands, Metinick Island, St. George's Islands, and Manhegin Islands, between which are various passages suitable for the coasters, excepting the channel between Green and Metinick Islands, where

* The Channel Rock may be known by its being a small rock of a yellowish colour, lying to the westward of a small group of islands, and which may at all times be seen above the water.

there is a reef of rocks under water. Upon Manhegin Island there is a lighthouse 30 feet high, which exhibits a light revolving every 2¼ minutes, at 170 feet above the sea, visible 25 miles: this light appears alternately of a red and white colour.

When approaching Manhegin light you can run close to the island on either side, taking care to go between some dry ledges on the northern side of it. In the island there is a small harbour, open to the S.W., which bears E.N.E. from Seguine light.

The Fox Islands, as before mentioned, divide the entrance of Penobscot Bay into two parts, the eastern of which is named Isle-au-haut Bay. On Brown's Head, the southern head of the Fox Islands, there is a lighthouse 20 feet high, which shows a fixed light at 42 feet above the sea, visible 13 miles. This lighthouse stands at the distance of 2 rods from the shore, and from it the following observations were taken:—Fiddler's Ledge, a reef above the water at two hours' ebb, bears from it W. ¼ S., distant about 3 miles; Crabtree Ledge, breaking at high water with a little sea, W. by S., about 1½ mile, and the Inner Dog Fish Ledge S.W., about 3 miles.*

On the western side of the western channel into Penobscot Bay (the channel formed by the Fox Islands and the western shore,) is Owl's Head, on which is a lighthouse 15 feet high, showing a fixed light at 117 feet above the sea, visible 15 miles. Thence in sailing up to Penobscot River, you pass by Camden on the west, and Cape Rosier on the east. Immediately round Owl's Head is a small cove, to sail into which bring a rocky point lying on you starboard hand to bear N.E., and a ledge of rocks that lies without that point to bear E.N.E., and anchor in 4 fathoms. You will lie open to the wind at E. by N. and E.N.E., but with all other winds are safe. The tide of flood here sets to the eastward, and the tide of ebb S.W. through the Muscle Ridges.

The eastern channel into Penobscot Bay traverses Isle-au-haut Bay, between Isle-au-haut on the west, and the smaller islands on the east, through the channel named Long Reach, which is formed by the shore of Sedgwick on one side, and Deer Island on the other, until it unites with the main channel, between Cape Rosier and Isleborough, or Long Island. Above this, on the east, stands Fort Castine.

Lights.—Besides the lights already described, the following are exhibited in Penobscot Bay:—

A fixed light at 100 feet above the sea on Eagle Island, which can be seen about 12 miles.

A fixed light on Dice's Head, near Castine, at 116 feet above the sea, visible about 15 miles.

A fixed light on Old Fort Point, above Castine, at 90 feet above the sea, visible 12 miles.

A fixed light on Grindel Point, at the entrance of Gilkey Harbour, Long Island, at 30 feet above the sea, visible about 10 miles. This light is attached to the keeper's dwelling.

A fixed light on Negro Island, at the south side of the entrance to Camden Harbour. This light is 50 feet above the sea, and can be seen 12 miles off.

A fixed red light on Indian Island, at the entrance of Goose River, on the west side of the bay. This light is placed on the keeper's dwelling-house, at 40 feet above the sea, and can be seen about 10 miles.

A fixed light on Whitehead Island, just outside the bay, on the west side of the entrance. The building is 30 feet high, and shows the light at 58 feet above the sea, visible 15 miles. Attached to this lighthouse is a bell, weighing 1,000 lbs., striking in foggy weather, three times a minute. The light is small but of great importance, as all vessels bound to Penobscot Bay, going in-shore, are obliged to pass by the light through the Muscle Ledges. A stranger wishing to pass this light must, if coming from the westward, run in for the land east of Manhegin, until the light bears S.W.; then steer N.E., and you can pass within half a cable's length of the head.

By proceeding from Mount Desert Rock on a W.N.W course, you leave the Isle-au-haut and Fox Islands on the starboard, the Seal Rock, Metinicus Isles, and Green Islands, on the port side, and thus arrive off the Muscle Ledge Islands, which lie to the north-eastward of Whitehead lighthouse, on the western side of the bay.

The fairway course to Owl's Head is N.W. by N. Having advanced to this point, you may bear away for either side of Isleborough or Long Island; proceeding past

* Fiddler's Ledge bears from Crabtree Point W.S.W., about half a mile; Crabtree Ledge from the same point S.W. by S., about half a mile; and the Inner Dog Fish Ledge bears S.S.E. from the Crabtree Ledge, distant about 1½ mile.

Belfast Bay and Brigadier Island, keeping the port shore on board. When you pass Brigadier Island for Old Fort Point (Fort Pownall), observe, before you come to it, that an extensive ledge of rocks lies about three-quarters of a mile to the E.S.E. of it, which is uncovered at half-tide. These rocks are readily perceived, when the wind blows, by the breakers. You may pass within a cable's length of Fort Point in smooth water.

If bound up the river, from Old Fort Point, with the wind a-head, and an ebb tide, you may make a good harbour in the East River, at about a league, E.N.E., from that point. The entrance of this river is on the south side of Orphan Island; here you may lie safe from all winds, and anchor in 8 or 7 fathoms, good holding-ground. You leave Orphan Island and several rocks, which are above water, on the port hand. If requisite, you may anchor to the N.W. of the island, on the starboard hand, before you pass through; but, with the wind and tide favorable, you may proceed up to Marsh Bay, keeping towards the port shore. Marsh Bay is about 1½ league above Orphan Island. When passing the bay, keep nearly in the middle of the river, and you will have neither rocks nor shoals until you arrive at the falls.

To sail up to Castine, &c., by the S.E. and eastern side of Isleborough or Long Island, bring the light on Dice's Head to bear N.E. by N. and run for it, until you are within half a mile of it; then steer E. by N. for the beacon on Hormar's Ledge, leaving Otter Rock beacon on your port hand a cable's length distant, and Bull's Head, Noddle's Point, and the beacon on Hormar's Ledge on the starboard hand. You may near the starboard shore off the entrance of Castine Harbour, within a cable's length, and steer E.N.E., which will carry you up the Ship Channel. You may anchor off the town, near the wharves, in from 8 to 10 fathoms water. The harbour is easy of access, and the tide rises, F. and C., 10 or 11 feet: it is high water at 10h. 45m.

To enter Penobscot Bay from the S. W.—In coming in from the south-westward, and being near Whitehead, with its fixed light, be careful not to haul in for it until it bears N.E., as you will thus avoid the ledges of rocks, lying nearly W.N.W., one mile, from Whitehead. Within this ledge, at about a pistol-shot from shore, there is a safe passage. In passing the head, to the eastward, you will see a good harbour on the port hand, named Seal Harbour, wherein you may lie safely, with any wind. In going in, give the port shore a berth, to avoid a sunken ledge extending about two-thirds over the mouth of the harbour, which breaks with any sea, except at high water.

Vessels of 60 or 70 tons may double close around the head of the light, and anchor right abreast of the store in the harbour. Those taken with calm and ebb tide may anchor any where off the light in from 12 to 20 fathoms. If the wind takes you at N.E. and ebb-tide, so that you cannot get into Seal Harbour, you may run into Tennant Harbour, which bears W. by S. from Whitehead, about 4 miles distant. To gain this place, continue a W. by S. course until the first house on the starboard hand bears N.N.W., when you may anchor in 4 or 5 fathoms, good ground. In sailing from Tennant Harbour, you may steer E. by N., one league, towards White Island lighthouse; but be careful not to haul in for it till it bears N.E., as a large ledge of rocks bears about W.N.W. from the head to the distance of a mile.

CAMDEN HARBOUR.—The North-east Ledges bear from the light on Negro Island, at the mouth of Camden Harbour, N.E. ¼ N., distant about three-eighths of a mile. North-east Ledges to Morse's Point, N. by W., distant about half a mile: these ledges are covered at high water, but are above the surface of the water at two hours' ebb. Barit's Point forms the western side of Camden Harbour, and bears from the light S.W. by S. ½ S., distant about three-eighths of a mile. Morse's Point lies opposite the lighthouse, and forms the eastern side of the harbour. Barit's Point to the Graves, S.E. ¼ S., distant about 1¼ mile. From the light to the Graves, S. by E. ½ E., distant about 2 miles. Owl's Head light bears from Camden light S. ½ W., distant about 12 miles. From the Graves to the Owl's Head light S. by W. ½ W., distant about 10 miles.

In coming from the westward, and bound to Camden Harbour, bring Owl's Head light to bear South, and steer N. ½ E. for Camden light, leaving the Graves and North-east Rocks on the starboard hand: the Graves is a small black rock, and is above the surface of the water at all times, and you may near it within a cable's length, on all sides. When up with the lighthouse leave it on the port hand one cable's length, and steer N.W. by N. ½ N., or N.N.W., distant nearly half a mile, and anchor near the north shore, in from 4 to 5 fathoms water, good holding-ground. If you are to the eastward, and bound for Camden Harbour, bring the light to bear W.S.W., or S.W. by W., to clear the North-east Ledges.

BROAD BAY.—Immediately to the westward of Penobscot Bay is Broad Bay, the navigation of which is too intricate for any description to be of service. At the entrance are many islands and sunken ledges, so that none but those well acquainted ought to attempt to run in. On the north end of one of the islands, at the entrance of this bay, named Franklin's Island, is a lighthouse 30 feet high, which exhibits a fixed light at 50 feet above the sea, visible 14 miles; from this light the entrance of George's River bears E.N.E., distant 3 miles.

The western point of Broad Bay is named Penmaquid Point. On it there is a lighthouse showing a fixed light at 64 feet above the sea, visible 15 miles, which is very useful to those frequenting Bristol and Waldoborough Rivers. From this light Manhegin light bears S.E. ½ E., distant 12 miles.

George's River.—This river is situated in the eastern part of Broad Bay, and in sailing into it bring the North Damiscove, or White Island, to bear W.S.W., then steer E.N.E. for Franklin's Island light which stands at the entrance; leave that on the starboard side, and you may sail past within a cable's length of it. When abreast of Franklin's Island light (which is on your starboard hand), steer N.E. for Otter Island, distant 4 miles, and when within a quarter of a mile of it, leave it on your port hand, and steer E.N.E. for Cauldwell's Island, having a high round rock, named Goose Island Rock, at its S.W. end. When you are abreast of this rock pass it at a distance of a cable's length, leaving it on your starboard side, and steer N.E. by E. and N.E.; but you should keep Cauldwell's Island best on board, on account of a sunken ledge lying in the middle of the river.

In beating into George's River, you ought to be particularly careful of a sunken ledge, which bears E.N.E. from Franklin's Island light, distant 2 leagues; also of another ledge lying off the S.E. end of Gay's Island, which extends one-third of the way across towards the Goose Rock.

Should you fall in with Manhegin Island in steering for George's River, you should steer N.N.W., leaving Manhegin Island to the starboard, until Franklin's Island light bears N.E. by E., when you may run for it, and sail as above directed. Franklin's Island light may safely be run for, when bearing from N.E. by N. to E.N.E.

In running from White Islands for George s River, be careful to avoid New Harbour Ledges, which lie E.N.E., distant 3 miles, from Penmaquid light, and have only 5 feet water over them; and when beyond these, you will see the Western Egg Rock, which bears E.N.E. from Penmaquid Point, distant 2 leagues, and W. by S. from Franklin's Island light, distant 1 league, which leave on your port hand; you will then discover the Eastern Egg Rock, lying nearly south from Franklin's Island light, distaut 3 miles, which must be left to the starboard. These Egg Rocks bear from each other E.S.E. and W.N.W., distant 1 league; their appearance is very similar, but you will pass between both, and have an excellent clear and open channel. You may distinguish one from the other by their bearings from the light. Should the wind be a-head, and you be compelled to turn to windward, stand on to the northward until Franklin's Island light comes E.N.E., and to the south-eastward until it bears N.N.E., without any danger. To the northward of the range of M'Cobb's Island, and the Western Egg Rock, the ground is foul and rocky; and so it is to the eastward of the range of Franklin's Island light and the Eastern Egg Rock. M'Cobb's Island forms the western entrance to George's River, and bears N.W., distant 1¼ mile, from Franklin's Island light.

JOHN'S BAY HARBOUR.—The western side of the entrance of John's Bay Harbour is formed by Thrum Cap Island, which is a small bare island bearing from Penmaquid Point, W.S.W., distant about 2⅓ miles. Penmaquid Point forms the eastern side of the bay, and is a low bare point; but the shores are bold on all sides. The lighthouse is situated on the south-east side of Penmaquid Point, and bears from the western point of the bay E.N.E., about half a mile.

Vessels westerly bound, and falling in with Manhegin Island, and wishing to make a harbour in a strong S.W. wind, must observe the following directions:—Bring Manhegin light to bear S.E., and steer N.W., distant about 11 miles for Penmaquid Point; and when the light on said point bears E.N.E., distant half a mile, you are then up with the western point of Penmaquid; leave it on your starboard hand, and give it a berth of one-eighth of a mile, then steer North for John's Bay Harbour, leaving John's Island,* M'Cown's Point, on your starboard hand, and Butford's Island, Stuart's

* John's Island is small and high, covered with spruce-trees, and situated near the centre of the bay.

Island, and M'Farling's Point on the port hand. If you are from the westward, and bound into this harbour, you bring John's Island to bear N. by E., and run until you are within one cable's length of it; then steer North for High Island Head, which you leave on your port hand, and when abreast of said head, steer N. ¼ E., about three-eighths of a mile, and anchor in from 4 to 5 fathoms water, good holding-ground. John's Bay Harbour lies about 5 miles to the eastward of Townsend Harbour, and is a fair open bay, having no rocks or shoals at its entrance, and vessels may run in without fear, by following the preceding directions.

BOOTH BAY, or TOWNSEND HARBOUR, is the inlet next eastward of Sheepscut River, and may be known by the lighthouse on Burnt Island, with its fixed light. Its entrance lies between Cuckold Islet on one side, and the Bantam Ledges with Damiscove Isle on the other, the distance between which is 2½ miles. With Burnt Island N. by E. you may run in without danger; and thence, with assistance, proceed to the harbour of Townsend.

In coming from the westward, leave Seguine Island on your port hand, giving it a berth of about half a mile; then steer N.E. by E., three leagues, when you will, if clear weather, open Townsend Light, on Burnt Island, bearing about N.N.E.; but still continue your N.E. by E. course until Burnt Island bears N. by E., then stand for it, continuing N. by E., and leaving it on the starboard (?) hand till up the harbour. At about three quarters of a mile, N.N.E., from the light there is a small bold island, named Mouse Island, which you leave on your starboard hand: after passing it you haul up N.E. for the Eastern Harbour, or continue your course N. by E. till you get the Western Harbour to bear W.N.W., when you may run in until Burnt Island is shut in by the land; or, you may anchor anywhere within Mouse Island, as neither rocks nor shoals lie off from the land.

In coming for Townsend, from the eastward, bring Manhegin light to bear E.S.E., and steer W.N.W., about 13 miles; which course and distance will lead you into the passage between, and to the northward of, the outer islands and the main. In steering thus you will make Burnt Island light, bearing about N.W. by W.; and then steer W. by N. until you get that light to bear N.W. Then haul up for it, keeping it on your port bow until up with it. You now steer N. by E., and follow the directions given above.

SHEEPSCUT RIVER.—If bound to Sheepscut River, from the westward, and you make the Island of Seguine, (upon which a lighthouse is erected, having a brilliant fixed light, 166 feet above the level of the sea, visible 22 miles,) you will leave the light on the starboard side, giving it a berth of half a mile: and when you pass it to the eastward, you must bring it to bear S.W., and steer N.E. and N.E. by N., 3 leagues, which will bring you to Ebenicook Harbour, on the eastern side of the river, which is fronted by several islets. The entrance of this place is narrow, but it makes like a basin when you get into it. The entrance in lies E. by N. You cannot get in here with a N.E. or easterly wind, but must have the wind South or westerly. After you get into the harbour, you must haul up N.E. or N.E. by N., as there are several sunken rocks on the starboard hand as you go in. There is anchorage in 4 fathoms, muddy bottom, safe from all winds.

But, if bound up Sheepscut River, in a large vessel, coming from the westward, you must go to the southward of Seguine Island, steering about N.E. or N.E. by E., one league; and when the river bears North, or N. a little westerly, you may run North, and keep the starboard hand best on board. There are many rocks and ledges, some above and some under water, lying to the north-eastward of Seguine; when you get up as high as Ebenicook, leave the two Mark Islands on your port hand, keeping your course North, a little easterly. Here it is requisite to have a pilot.

A brilliant fixed light, 39 feet above the sea, visible 13 miles, is shown from Hendrick's Head, near the mouth of Sheepscut River, on the starboard hand going in.

KENNEBECK RIVER.—Pond Island Lighthouse (situated on Pond Island to the northward of the Seguine Light, and which bears a fixed light at 52 feet above the level of the sea,) bears N. ¼ W., 2¼ miles, from Seguine Lighthouse. These lights are intended ta facilitate the entrance to Kennebeck River, which is one of the most considerable in the State of Maine.

If coming into Kennebeck River from the westward, keep about a quarter of a mile from Seguine Island light; in doing which you will avoid Jack-knife Ledge, which bears from Seguine light N.W., distant 1¼ mile, and Ellingwood's Rock, lying N., one-quarter of a mile, from Seguine. After passing Ellingwood's Rock, bring

Seguine light to bear S., and steer N. for Pond Island light. Leaving Pond Island a cable's length on the port hand, care should be taken on the flood tide to haul quickly round Pond Island Point, to avoid the Sugar Loaves (two small islands bearing N., half a mile, from Pond Island,) upon which the tide sets very strongly. The course after passing Pond Island is about N.W. to the fort on Hunnewell's Point (to which you will give a berth of a cable's length,) and steer North, one mile, for Coxe's Head, on which also is a fort. The course is then N.E. to Perkin's Island, which you will leave on the starboard hand, about one mile, and you will give it a berth of a cable's length, to avoid two sunken ledges that lie nearly abreast of Perkin's Island, and near the middle of the river; then steering about North, one mile, you will have fine anchorage at Perkin's Flats, in 4, 5, and 6 fathoms. This is as far as a vessel, conducted by a stranger to the place, should ever venture to advance, especially with a heavy ship.

There is good anchorage anywhere between Seguine and Pond Islands, when the weather is moderate, in from 5 to 8 fathoms, within half a mile of Pond Island; but should the wind blow with any violence, and you are far enough to windward to weather Ellingwood's Rock and Seguine Ledges, then it will sometimes be advisable to run for Townsend Harbour; or, with the wind at N.W. and a flood-tide, you may, by fetching within a cable's length of the Lower Sugar Loaf, and leaving it on the port side, run into good and safe anchorage, in from 6 to 3 fathoms, in Heald's Eddy.

If bound into Kennebeck, and falling to the eastward of Seguine, bring the light on Pond Island to bear N.W. by W., and run for it until within a cable's length, then follow the preceding directions. There is safe anchorage, with an off-shore wind, anywhere between Small Point and Seguine, only taking care to avoid Jack-knife Ledge.

Safe anchorage may be found from Coxe's Head to Perkin's Island, nearest the eastern shore. The usual rapidity of the tide between the Seguine and the entrance to the Kennebeck is 3 to 4 knots. There is also a passage into the Kennebeck River, leaving Pond Island on the starboard hand; but that is not recommended, for only 16 feet can be obtained at high water. To the eastward of Seguine you will have deep water. At the westward, the tide of flood sets strongly into New Meadows, and W.N.W. into Broad Sound, and up to Portland; the ebb-tide is the reverse.

Between Seguine and Cape Elizabeth the soundings are various; at times there are 18 or 20 fathoms, rocky bottom, and within a cable's length you will find 30 or 35 fathoms, muddy bottom. The whole of this district is now being surveyed.

From the lighthouse on Seguine Island the Portland light bears W. $\frac{1}{2}$ S., 20 miles; the two lighthouses on Cape Elizabeth, W.S.W. $\frac{3}{4}$ W., 20 miles; and Alden's Ledge, S.W. by W. $\frac{3}{4}$ W., 18 miles.

There are several rocky ledges near Seguine, which bear from the light as follows:—Five-Fathom Ledge, S. by W., three-quarters of a mile; Ellingwood's Rock, North, a quarter of a mile; Seguine Ledges, N.N.E., distant half a mile, which always dry; Jack-knife Ledge, N.W., $1\frac{1}{4}$ mile, over which are 8 feet water; Wood Island Reef, N.N.W., distant $1\frac{1}{3}$ mile, which has 4 feet water on it; and the Whale's Rock, N.N.E., distant $1\frac{3}{4}$ mile.

NEW MEADOWS RIVER.—At about 6 leagues, E.N.E., from Cape Elizabeth, and 2 miles westward of Small Point, is the mouth of the Meadows River, a large inlet, affording good shelter during adverse winds. If you should happen to fall in with this inlet with the wind at S.E. or S.S.E., and bound to the eastward you will find good shelter in the above river. In standing to the northward, you will have a large round island on your starboard hand covered with spruce-trees, together with two large rocks, one named the Brown Cow and the other the White Bull, which are some distance from each other.

In sailing in, you must leave the Brown Cow on your starboard, and the White Bull on your port hand, and may approach to the latter within a cable's length, and when you have passed it, should steer for Horse Island, lying to the starboard, which has a house upon it, and to which you may approach within a quarter of a mile. To the westward of the island there is a large rock, which is covered at high water, but is bare at half-tide; you may go on either side of it when it is in sight, but the widest passage is to the eastward. When you have passed this rock, steer N. by W. or N.N.W., which course will carry you up to a large island, named Bear Island, which is covered with spruce and birch-trees. When you have passed this island about a quar-

ter of a mile, you may haul in for the starboard shore, and anchor in 5 or 6 fathoms water. This is the best place for anchoring with the wind S.S.E. or East; but it is necessary to be careful of a ledge of rocks running to the northward of this island, about half a mile off.

You may anchor in this bay according to the direction of the wind; but if it should be to the eastward, anchor on the east side. If you have lost your anchors and cables, there is a large cove on your starboard hand, about 2 miles from Bear Island, bearing about North, which is sufficient to hold 30 or 40 vessels; it is land-locked all round, so that no wind can damage a vessel after she gets into it.

HUSSEY SOUND.—If from the eastward, and you make Seguine Light, bring it to bear East, and steer West for the Sound, if you have day-light and a leading-wind, as you have nothing but islands on your starboard hand, between which the tide of flood sets strongly; when you get within 2 miles of the Sound, you will make two islands, without trees, named Green Islands. Continue your course till Hussey's Sound bears N.N.E., then steer in. When past the two islands, after entering the Sound, leave three islands on your port, and two islands on your starboard side; the northern island on your starboard is called Smith's Island; when you have passed it about three-quarters of a mile, you may haul away E.N.E. till you shut in the said island to the S.E., then anchor, in 8 or 9 fathoms, muddy bottom, with Hog Island to the S.W., Basket Island to the N.W., Great Gabegue Island to the N.E., and Smith's Island to the S.E. In this harbour 200 sail of vessels may ride safe from all winds; and when wind and tide serve, you may be out to sea again in an hour.

The Half-way Rock is high and black, about 600 feet in diameter, and elevated about 16 feet above the level of the sea. At the distance of 600 feet from the rock, on the N.W., North, N.E., E., and S.E. sides, there are 5 and 6 fathoms, deepening gradually to 25 fathoms, within three-quarters of a mile. From it a *reef* extends W. by S., one-eighth of a mile, and has 10 fathoms within a cable's length of it. You may near this rock on all sides within a quarter of a mile, and find from 15 to 25 fathoms. From this rock Seguine Lighthouse bears E. $\frac{1}{2}$ N., 13 miles; Cape Elizabeth Lighthouses, S.W. by W. $\frac{3}{4}$ W., 9 miles; Cod Rock, S.W. by S., about 6 miles; Portland Lighthouse, W. $\frac{1}{2}$ S., distant $11\frac{1}{2}$ miles; Green Islands, W. $\frac{1}{2}$ N., about 5 miles; Drunken Ledges, N.N.E., $2\frac{1}{2}$ miles; Mark Island, N. by E. $\frac{1}{2}$ E., $4\frac{1}{2}$ miles; Jewill's Island, N.W. by N., about 3 miles; and Eagle Island, North, $4\frac{1}{4}$ miles.

The Drunken Ledges may be seen at all times breaking with a little motion of the sea. Mark Island is a small bare island, and has a stone monument erected on it as a guide for vessels running into Broad Sound. Eagle Island is a small high island, covered with trees, at the entrance of said sound. Mark Island and Eagle Island form the eastern side of the entrance to Broad Sound; and Brown Cow and Jewill's Islands form the western side. Green Islands are two in number, and bear from Jewill's Head S.W., distant $1\frac{1}{2}$ mile.

The Cod Ledge is not very extensive, being barely half a mile in circumference, and has $2\frac{1}{2}$ fathoms on it at low water, gradually deepening to 5, 7, 8, and 12 fathoms. It bears from Portland Lighthouse, E.S.E, about 7 miles; from Cape Elizabeth, E. by N. $\frac{1}{2}$ N., distance 5 miles; and from Green Island, S.S.E., about 3 miles. This ledge breaks with strong S.E. winds.

PORTLAND HARBOUR.—Upon Portland Point, which lies about 4 miles to the northward of Cape Elizabeth, there is a lighthouse, built of stone, 45 feet high, which shows a fixed light visible about 20 miles. The sound or harbour of Portland is buoyed, and the following directions are to be observed when sailing in.

On Fort Hill there is an observatory, from which vessels approaching the coast can be discovered 15 leagues off; the colours or signals may be distinguished 8 leagues distant, if the weather be clear; and should any assistance be wanted, they should place their ensign over the private signals, and if they can be discerned, information of their situation will be made known to the owners. This observatory is built on an eminence, 141 feet above high-water mark, and the building is 32 feet high, being painted red, and having the telescope at the top; it bears from Portland Lighthouse, N.N.W. $\frac{1}{2}$ W., distance 4 miles; and these in a line will be a good mark for clearing Alden's Ledge, as it carries you three-quarters of a mile to the eastward of it.

Vessels of a large draught will find the best water by bringing Portland light N.W. by N., and steer N.W. by N., and run directly for it.

If you should fall in to the eastward of Portland, and make Seguine light, bring it to bear East, and steer West, which course you are to continue until you make Port-

land light to bear from N.W. to W.N.W., when you may run for it without fear. Remember always to attend to the state of the tide, bearing in mind that the flood sets strongly between all the islands to the eastward.

In coming from the south-westward, when within half a mile of Cape Elizabeth, the red buoy on Broad Cove Rock may be seen. This buoy bears N.N.E. from the pitch of the cape, distant 1½ mile, and lies in 24 feet water. When advanced to it, leave it to the port hand, at half a cable's length, and steer N. by E. ½ E., a mile, which will carry you up to the white buoy on Trundy's Reef, lying in 16 feet water; give this the same berth as the former. You may run N. by W. ½ W., 3 miles, for Portland light-house; and when up with the point upon which the lighthouse stands, give it a small berth, and steer N. by W.. leaving Bang's Island on the starboard side, till you come to House Island, the S.W. point of which bears north from the lighthouse, distant nearly 2 miles. Before you are up with this island, the black buoy on Spring Point Ledge may be seen; it bears N.W. by W. from the S.W. part of House Island, distant half a mile, and lies in 14 feet water. When up with this buoy, you open the town; and giving it a small berth, you may haul up N.W. for the white buoy on Stanford's Ledge: the latter lies also in 14 feet water, and is a mile distant from Spring Point Ledge buoy. Giving the white buoy a small berth, you may keep midway up the river, and safely anchor off the town, at pleasure.

It is to be observed that all the buoys before mentioned are to be left on the port hand when coming in. Besides the above, there are also two small buoys lying upon two ledges, in Whitehead Passage, at the N.E. part of Bang's Island: this passage is narrow, and seldom used by large vessels. By keeping midway between the two buoys, the red on the starboard, and the white on the port, when going in, you will not have less than 5 fathoms water. After passing the buoys, keep midway in the passage, and run to the distance of a mile, which will carry you into Ship Channel, the same as if you had passed the lighthouse.

If from any cause the buoys have been removed from their station, then observe the following instructions; but in such circumstances a prudent master will not attempt to run his vessel in without a pilot.

"When you come from the south-westward, and intend to go into Portland, give Cape Elizabeth a berth of half a mile, and steer N.N.E. until you bring Portland lighthouse to bear N.N.W., when you must haul up N.N.W. if the wind will permit; but if you are in a large ship, and the wind N.W. or W.N.W., your safest way is to continue your course N.N.E., which will carry you safe into Hussey's Sound, allowing it to be tide of flood, as Portland Sound is narrow, but bold between the lighthouse and Bang's Island, the latter of which is on your starboard hand. If you should turn into Portland in the night, in standing to the south-westward, you must go about as soon as the light bears N.N.W.; and in standing to the eastward, you must go about as soon as the light bears W.N.W., for there is a ledge of rocks that bears S. by E. from Portland lighthouse, and also a low island, named Ram Island, east northerly, one mile distant from the lighthouse; but if you have a leading wind you may go in without fear, keeping about middle of the channel way, and when abreast of the light, steer about N. by W. for House Island, which you leave on your starboard hand: when you pass House Island, bring it to bear S.E. by E., and steer N.W. by W., or W.N.W. with the tide of flood. In steering the above course, you will see a round bushy tree to the north of the town, and a house with a red roof, and one chimney; bring the tree to the west of the house, which course will carry you up the channel way, in 6 or 7 fathoms water; but when you come abreast of the fort which stands on a hill, haul away W.S.W., as there is a shoal bank on your starboard hand that has not more than 10 or 12 feet on it at high water, which you are to avoid. Here you will be careful of two ledges of rocks, one named Spring Point Ledge, two miles, N. by W. ½ W., from the lighthouse, and the other three miles, bearing N. by W. ½ W., named Stanford's Ledge, which has a buoy on it, and stretches off from your port hand near half a mile in length. They lie to the S.W. of House Island, and are all bare at low water. If you are obliged to turn in here, they are much in the way, and when you are standing to the southward, be careful of them. The marks will do in the day-time, but are of no service in the night. There is a pilot who generally attends here. This harbour is open to the wind at N.E. and E.N.E. If you should come in a dark night, your best way is to go into Hog Island Road, which may be done by steering as follows:— When you pass the lighthouse, steer N. by W. until you pass Bang's Island, which you will leave on your starboard hand; in steering this course, you will make House Island,

which you will leave on your port hand; when you are between both of these islands, you steer N.E. by E. till you come to the second island on your starboard hand. If it is day-time, you will see a large house on said island, and may anchor as soon as abreast of it, in 10 or 12 fathoms, muddy bottom."

Vessels bound to Portland, falling in to the westward, and making Wood Island light, must bring it to bear S.W. by W. $\frac{1}{4}$ W., and steer N.E. by E. $\frac{1}{4}$ E., 13 miles, which will bring them up with the buoy on Alden's Ledge, whence steer into Portland by the instructions previously given.

CAPE ELIZABETH.—This cape is situated 5 miles to the southward of Bang's Island, and is distinguished by two lighthouses which stand 300 yards apart, and bear from each other S.W. $\frac{1}{2}$ W. and N.E. $\frac{1}{2}$ E. The lanterns are 140 feet above the level of the sea. The N.E. light is fixed, and the S.W. one revolves, its revolution being about minutes. From the N.E. light Portland light bears N. $\frac{1}{4}$ E., 4 miles; Wood Island light SW. $\frac{1}{2}$ W., 9 miles; and Seguine lighthouse E. by N. $\frac{1}{4}$ N., 22 miles.

Alden's Rock is a dangerous ledge, which is situated $2\frac{2}{3}$ miles, E.S.E., from the Cape, and has only $5\frac{1}{2}$ feet water over it: in rough weather the sea breaks on it. A red spar-buoy is placed on Alden's Rock, with a staff of about 12 feet long, to which is attached a red flag. There are also two watch buoys within 15 or 20 feet of this buoy. The most dangerous part of this ledge are two rocks bearing from each other E.S.E. and W.N.W. The distance between these rocks is 420 feet. On the western rock are $5\frac{1}{2}$ feet, and on the eastern rock $7\frac{1}{2}$ feet at low water; between them are 3, 4, and 5 fathoms. The western rock bears from the buoy S. by W. distant 240 feet. The eastern rock bears S.E. $\frac{1}{2}$ S. distant 520 feet. At the distance of 600 feet from the eastern rock, on the S.E., E. and N.E. sides, are 4, 5, and 6 fathoms water. At the distance of 300 feet from the western rock, on the S.W., W. and N.W. sides, are 6, 7, and 8 fathoms.

The following are the bearings and distances, from the north-easterly light on Cape Elizabeth, of the shoals and reefs near the cape:—Alden's Rock, S.E. by E., $2\frac{2}{3}$ miles; Hue and Cry Rocks, S.E. $\frac{1}{2}$ S., $3\frac{3}{4}$ miles; Taylor's Reef, S.S.E. $\frac{1}{2}$ E., $1\frac{1}{4}$ mile; Broad Cove Rock, N.N.E. $\frac{1}{2}$ E., $1\frac{1}{4}$ mile; outer point of Watch Ledge, S.W. $\frac{1}{4}$ S., 2 miles; and S.E. side of Richmond Island, S.W., $2\frac{1}{2}$ miles.

CAPE ELIZABETH TO CAPE ANNE.

From Cape Elizabeth to Wood Island, on the south side of Saco Bay, the course and distance are about S.W. $\frac{1}{2}$ S., 8 miles; and thence to Cape Porpoise, S.W., 9 miles.

Wood Island is high, woody, land, and very even; and on the eastern side of the island, near the entrance of the Saco River, is situated a lighthouse having a revolving light. The light is 45 feet high, 63 feet above the sea, and may be seen about 18 miles off. When, however, it is first made, at this distance, the eclipse, in each revolution, will be total in every minute and a half; and is thus repeated until within the distance of 7 or 6 miles, when the light will not wholly disappear.

In sailing from the south-westward, bring Wood Island light to bear N.N.W. or N.W., and run until within a cable's length with safety. You may go into the harbour either at the eastward or westward of the island. There are several rocks to the westward of the island, and also a long bar which lies to the S.W., about three-quarters of a mile distant, together with two ledges, one of which bears S.E. by S. from the light, distant half a mile, having 10 feet water on it at low tide, and the other is a dangerous ledge named Danceberry, bearing S. by E. from the light, distant about three-quarters of a mile, and breaks at all times. When you have the wind to the southward, you may lay your course in, and anchor near Stage Island, on which is a monument: this is named Winter Harbour. You may go in the eastern way, and have room to turn your vessel, which is an advantage you cannot have in going to the westward; but here you are exposed to the wind at N.E. and E.N.E.; but if your cable and anchors are not good, you may run into the Pool, and lie safe from all winds.

Saco lies about a league to the north-west, but is a barred place, and has not above

10 feet at high water; but a considerable trade is carried on there. In sailing by Richmond Island, which lies to the north-eastward of Saco, you must be careful of a sunken ledge, named Watch Ledge, that lies off about S.E., nearly half a mile from the N.E. end of the island: it does not show itself except the wind blows fresh, but you need not go so near the island, unless you have a scant wind, or turning to windward.

CAPE PORPOISE.—On the south-west part of Goat Island, at the entrance of the small harbour of Cape Porpoise, is situated a lighthouse which shows a fixed light at 33 feet above the sea, visible about 10 miles.

If you are to the eastward, and make Wood Island light, when bound to Cape Porpoise Harbour, bring Wood Island light to bear N.E. by N., and run S.W. until you bring Cape Porpoise light to bear N. by W.; then steer directly for this light until you shut in Wood Island by the eastern head of Cape Porpoise Harbour, when you will be abreast of a ledge, upon which the sea breaks when the wind is at all high, named the Old Prince, lying half a mile, S.E. by S., from Cape Porpoise Light. Now steer N.N.W. until Cape Porpoise light bears E.N.E., when you will be up with the entrance of the harbour. If it should be low water, you must keep midway between the two points, but with high water keep the port shore best aboard. From between the two points steer N.W., a quarter of a mile, and then anchor in 3 fathoms, at low water. By following these directions you will find from 3 to 6 fathoms water. The harbour is not safe except with a fair wind. Opposite to the lighthouse is Folly Island, which forms the western side of the harbour. The S.S.E. point of Folly Island bears from the light S. $\frac{1}{2}$ W., about one mile and a quarter, and a shoal projects from it to nearly a mile.

A spar buoy, painted red, and elevated 9 feet above the water, is or was moored in 8 fathoms, at low water, near the Old Prince, with Cape Porpoise Lighthouse bearing N.N.W., distant about five-eighths of a mile; the Old Prince being distant from the buoy about one-eighth of a mile on a N.N.E. bearing. When running for Cape Porpoise Harbour you may go on either side of the buoy, by keeping it close on board, and after passing it, bring it to bear S.E. by S. and steer N.W. by N. for the entrance of the harbour. The above directions given for entering can then be followed, but it is best and safest to have a pilot, or a person well acquainted with the coast, on board.

KENNEBUNK lies to the N.E. of Cape Porpoise. At the mouth of the harbour are two piers, one on the eastern and one on the western side of the channel, running from the shore about 3 to 400 feet towards the bar, extending a little beyond low water mark, with a flag-staff and beacon on the top, which may be seen about one mile distant. Due south from the head of the piers, at the distance of three-quarters of a mile, is a rocky ledge named the Fishing Rocks, which is covered at high water: between this and the head of the piers is the anchoring ground. You should keep well to the eastward of this ledge in approaching, although a tolerable passage lies to the westward, but it should only be navigated by a pilot. On the bar are only 2 or 3 feet at low water; rise and fall of common tides from 8 to 9 feet, increasing sometimes to 10 and 12 on full and change. High water, full and change, 11h. 15m.

The Fishing Rocks extend E.N.E. and W.N.W., being in parts dry at 2 hours' ebb, and breaking with the least motion of the sea, or when there is a little wind. Near the rocks is a red spar buoy, in 4 fathoms at low water, and elevated 10 feet above the surface of the sea, and on the shoal a spindle is also erected, with a cask at the top; this latter bears from the spar buoy S.W. by W. $\frac{1}{2}$ W., distant one quarter of a mile. The spindle lies with Flying Point bearing E. by N., three quarters of a mile; Fox Point N.E., three-quarters of a mile; Boothby Point N. by W., about three-qnarters of a mile; and Harding's Rock W.N.W., about three-eighths of a mile. Kennebunk is frequented principally by vessels in cases of distress.

The course and distance from Cape Porpoise to Cape Neddock are S.W., 12$\frac{1}{2}$ miles: between lies Wells Bay; and close to the northward of Cape Neddock is the Cape Harbour, which is very small.

THE WHITE HILLS.—The White Hills are an important land-mark to those approaching these coasts, as they may be seen many leagues off at sea, like a bright cloud above the horizon, and when no other land is in sight. They lie N.W. from Portland, and N.N.W. from Wood Island. They have been seen in latitude 43° 10′ at 46 miles from Cape Elizabeth, where there are 80 fathoms of water, muddy ground. If, from this spot, you steer W.N.W., you will make Agamenticus Hills; which, when bearing

W. by N., 6 or 7 leagues, appear to be three in number, the smallest being to the eastward. At the same time you will make Wells, or Bonabeg Hills, bearing W.N.W.; and when on the northern part of Jeffery's Bank, in 45 fathoms, you will see the hills of Agamenticus bearing W. by N. or W.N.W.

BOON ISLAND, &c.—It is proper to recommend those coming from the eastward not to go to the northward of latitude 43° in thick weather, unless well acquainted with the coast, and certain that they are to the westward of Boon Island Ledges. Neglect of this precaution has proved fatal to many. Upon Boon Island, a low island about a quarter of a mile long, and which lies S.E. from Cape Neddock, there is a lighthouse of stone, having a dwelling and an oil-house adjoining. The lantern is 70 feet above the level of the sea, and bears a fixed light, visible 6 leagues off. A ledge of rocks lies one mile due North from this island, which must be carefully avoided; there is also at about a league to the eastward of the island, a dangerous reef under water, with only 4 feet upon it, over which the water breaks continually; the position of this reef hill be seen on inspecting the chart: it is very dangerous, and therefore should be avoided. This reef lies about S.E., 5 or 6 leagues, from Agamenticus Hills.

A buoy, painted red and black in stripes, has been placed on the north-west side of Boon Island Rock, bearing East from the island, distant one league.

In the offing of the coasts of New Hampshire and Massachusets, where there are 70 and 75 fathoms of water, muddy bottom, a strong current is commonly found setting to the S.W.

YORK LEDGE.—York Ledge extends E.N.E. and W.S.W. about 400 feet, being about 300 feet wide. Some parts of the rock are bare at three-quarters tide, and a shoal runs off it in a north-east direction, about a quarter of a mile, on it are only two fathoms at low water. Half a mile from the rock the soundings are gradual from 5 to 20 fathoms.

The beacon erected on the ledge is of iron and 33½ feet high, being about 25 feet above the level of the water. The beacon consists of an iron tabular column resting upon pillars, and supporting an iron base of 3½ feet diameter, upon which is inscribed the name and date "York Ledge, 1841."*

The Triangle, which breaks in a heavy sea, and which has 4 fathoms at low water, bears S.W., 2 miles distant, from this beacon.

Boon Island light bears from this beacon E. ¾ N., 5½ miles; Whale's Back light, W. by S. ¼ S., 5 miles; White Island light, S. by W. ¾ W., 8½ miles.

York Harbour is small, but is safe when once entered. Twelve feet can be carried in at low water, and the rise of tide is 9 feet.

PORTSMOUTH HARBOUR is the chief port of New Hampshire. It may easily be known by the Isles of Shoals light, which is of rather a peculiar description, appearing on one side, of a bright red colour, on another side blue, and on another side of the natural colour, and revolves in 3½ minutes. Portsmouth lies behind this; its entrance is formed on the west side by Newcastle Island, a small island with a fixed light on its N.E. point near Fort Constitution; and on the east side the land terminates in Garish's Point, which is rocky to about a mile off, having two islets off it, connected together by a reef which is covered at half tide. This reef is named the Whale's Back, and has a lighthouse on it which shows two fixed lights vertically, ten feet asunder.† S.S.E. from the Whale's Back, half a mile, are the Kits Rocks, which have 12 feet on them, being marked by a white buoy; and S. by W., one quarter of a mile, from Newcastle Island light, is Stillman's Rock, also under water, and marked by a black buoy. In beating into the harbour, by giving these buoys a good berth, there will be no no danger.

In sailing to Portsmouth from the south-west, having made Cape Anne, and being to the eastward of the dry Salvages, bring them to bear S. by E., and steer N. by W. or N. ¼ W. on which course you will make the Isles of Shoals, and may thence take a new departure. Bring White Head Island lighthouse S.S.E., and then run N.N.W.;

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* In the gales of last winter (1850-1) this beacon was carried away, but efforts have since been made to re-establish it.

† The following are the bearings and distances of places from Whale's Back light, viz.:—Western Sister Shoal, N. 89° 41' E., a mile, 1310 feet; Eastern Sister, N. 75° 53' 30" E., a mile, 3480 feet; Odiorne's Point, S. 44° 30' W., a mile, 1920 feet; Phillip's Rocks (12 feet) S. 83° 30' E., a mile, 300 feet; Kitt's buoy, S. 23° 50' E., 2130 feet. Gun Boat Shoal bears from Whale's Back light S. by W. ½ W., and from Odiorne's Point S. ¼ E.

but should the wind come to the northward, and you are obliged to turn into Portsmouth, take care to avoid the Gun-boat shoal, and stand to the westward no farther than to bring Portsmouth light to bear N. by W., until you arrive within Odiorne's Point; and when standing to the eastward, you should tack so soon as the lighthouse on Newcastle Island bears N.N.W., until you get within Wood Island. Be cautious of approaching Odiorne's Point when coming in from the south-westward, as sunken rocks lie off it more than half a mile, which do not appear with off-shore winds.

In standing to the eastward, be likewise cautious of the Whale's Back lying S.S.W. from Wood Island, which must be left on your starboard hand going in.

At the entrance of the harbour the tide flows, F. and C., at 11h. 15m. Springs rise from 10 to 12 feet; neaps 6 to 7 feet.

Ships bound to this port from the eastward, with a turning wind, should beware of the York Ledge, before-mentioned. There are also the Triangle to the south-westward of the York Ledge beacon, and in the vicinity of Boon Island the ledge to the northward and the reef to the eastward of that island, all previously described.

If coming in from sea, and you make the Isles of Shoals, and are to the eastward of them, run for them until within one mile of the eastern island, then steer W.N.W., until Portsmouth Light bears North, then follow the previous directions, being careful to pass the Whale's Back on the starboard hand. When beating into the harbour, it is not prudent to stand further to the eastward than to bring the light to bear N. by W. $\frac{1}{2}$ W., or to the westward further than to bring it to bear North. If you are to the westward of the Isles of Shoals, give White Island Light a berth of $1\frac{1}{2}$ mile, bringing it to bear East, and then run N. by W., 9 miles, for Portsmouth Light.

The Gun-boat Shoal lies 3 miles south of Portsmouth, and about 1 mile from the shore. On it are from 2 to 3 fathoms. It runs E.N.E. and W.S.W. about 2 cables' length, and bears from Whale's Back light S. by W. $\frac{1}{2}$ W., and from Odiorne's Point S. $\frac{1}{2}$ E.

ISLES OF SHOALS.—The Isles of Shoals are a cluster of low rocky islets lying to the south-eastward of Portsmouth. In clear weather they may be seen a considerable distance off, and the several objects upon them, the lighthouse and meeting-house, will aid considerably in recognising them. If bound to Newbury or Portsmouth you should give these islets a large berth, going fully 3 miles to the southward of them; for about 2 miles off them there is a dangerous rock, named Innes's Rock, which dries at or a little before low water. This rock (the Innes's Rock) lies about 2 miles, S.W. by S., from Star Island.

White Island, the south-westernmost of the Isles of Shoals, is a rocky island three-quarters of a mile in length from S.E. to N.W., and about $1\frac{3}{4}$ mile distant from the Meeting-house of Star Island. A reef extends about one-third of a mile from its N.W. end, to which a berth must be given when passing.

A lighthouse is erected upon White Island, exhibiting a revolving light on a singular principle, 87 feet above the level of the sea. There are 15 lamps with reflectors, on a triangle, 5 on each side, which makes one complete revolution in $3\frac{1}{3}$ minutes; during this time is shown, successively, a blood-red light, a blue light, and a brilliant white light.

Each of these lights is distinctly visible for a period of 50 seconds, at the distance of 9 miles; and between each appearance, of a different colour, the light is eclipsed for 10 seconds. Within the distance of 9 miles, the light does not wholly disappear in clear weather, but taking the medium the greatest power of light will be to the least as 40 to 1. The bright white light can be seen in clear weather 7 leagues off, and on approaching, the red and blue lights appear in succession. The bright light can be seen 2 or 3 miles further than the red, and the red light about the same distance farther than the blue.

A bell of 800 lbs. weight is suspended to the tower of the lighthouse, which is kept tolling by machinery at the rate of 10 strokes in a minute, during foggy weather. It can be heard about 4 miles distant.

From White Island Lighthouse the bearings and distances are as follow:—To Portsmouth lighthouse N.N.W., $7\frac{1}{2}$ miles; Square Rock lies directly in this range, and is distant from White Island lighthouse five-eighths of a mile; to Boon Island light N.E. by N., distant 12 miles; to Cape Anne light S. $\frac{5}{8}$ W., $19\frac{1}{2}$ miles; to Rye Meeting-house N.W. by W. $\frac{1}{2}$ W., 9 miles; and to Star Meeting-house N.E., seven-eighths of a mile. Innes's Rock bears S.W. by S. from this island, distant 2 miles, and is uncovered at low water; to the N.W. point of Hog Island N. by E. $\frac{3}{4}$ E.; to Cedar Island Ledge

E.N.E. $\frac{3}{4}$ E., one mile and a half; to Anderson Ledge S.E. by E. $\frac{1}{2}$ E., one mile and an eighth; and to White Island Ledge W.S.W., one-third of a mile.

Londoner's Island lies about one mile and a half to the northward of White Island. It is about five-eighths of a mile in length from N. to S., and high at each end; but, at high tides, the middle is sometimes covered. This island is surrounded with rocks, some of which are always above water. The south end bears west from the Meeting-house; the north end W.N.W. $\frac{1}{2}$ W., about half a mile distant.

Star Island, distinguished by its Meeting-house, is about three-quarters of a mile in length from S.E. to N.W., and about half a mile in breadth; its north end is covered with buildings.

The Meeting-house stands on an eminence, a little to the northward of the middle of the island, fronting the west; the roof of this building is only 12 feet high; but thence to the top of the steeple, which stands in the middle of it, is 30 feet more; and the whole height, from the surface of the water, is about 65 feet. Being painted white, it may be seen from a distance of 8 or 9 leagues. It bears from Thatcher's Island lights (Cape Anne,) N. $\frac{1}{4}$ E., distant 6$\frac{1}{2}$ leagues; from Newbury Port lighthouse N.E. $\frac{1}{2}$ E., 4$\frac{1}{2}$ leagues; from Portsmouth lighthouse S.S.E $\frac{1}{2}$ E., 3 leagues; from the western Agamenticus Hill S. $\frac{1}{2}$ E.: from Boon Island lighthouse S.W. $\frac{1}{2}$ S., 4$\frac{1}{2}$ leagues; and from Boon Island Ledge, which lies one league east from Boon Island S.W. by W., 3$\frac{1}{2}$ leagues. Off the south end of this island, at about three-quarters of a mile from shore, lies a rock named Anderson's Rock which is uncovered at half-tide, and should, therefore, have a good berth when passing. From the Meeting-house it bears S.S.E. There is also a rock between this island and Londoner's Island, bearing from the Meeting-house N.W. by W. $\frac{1}{2}$ W., distant one-third of a mile.

Cedar Island is the island which lies to the eastward of Star Island; it is small, being only about one-quarter of a mile from east to west. The east end bears from the Meeting-house E. $\frac{1}{4}$ N., and the west end E.N.E. $\frac{1}{2}$ E.; three-eighths of a mile distant. At half a mile from the S.E. end of this island is a rock, uncovered at half-tide, which bears E. by S. from the Meeting-house.

Smutty Nose Island is nearly a mile in length from east to west, and about half a mile in breadth. It may be known by a windmill on its north part. At the west end is a fine harbour, named Haley's Cove, where fifteen or twenty small vessels may lie safely in all winds. There are several buildings near this place. Between the island and Hog Island, which lies to the northward, there is a sufficient depth of water for any vessel, by keeping nearly in mid-channel; but there are reefs on each side. The east end of Smutty Nose Island bears from the Meeting-house E.N.E., about five-eighths of a mile distant.

Hog Island is a high island lying to the northward of Smutty Nose Island; is about one mile in length from east to west, and five-eighths of a mile from north to south. The west end lies from the Meeting-house N. by W. $\frac{1}{4}$ W.: east end of ditto N.N.E., seven-eighths of a mile distant.

Duck Island is the northernmost of the Isles of Shoals. It is low and rocky. Some parts are covered at high water, with rocks projecting in every direction, especially at the N.W. end, where a ledge runs off to the distance of half a mile. It is the most dangerous of the Isles of Shoals, and must be cautiously avoided. Its east end bears from the Meeting-house nearly N. by E. $\frac{3}{4}$ E.

HAMPTON HARBOUR lies about 5 miles N. $\frac{1}{3}$ E. from the entrance of Newbury Port; between, at the distance of 3 miles, N. by E. $\frac{1}{2}$ E., from the lights on Plum Island, lies a dangerous rock, having only 3$\frac{1}{2}$ feet over it; and, at some distance to the eastward of Hampton Harbour are several sunken rocks.

NEWBURY PORT.—The entrance to Newbury Port, or Newbury Harbour, is distinguished by two lighthouses, standing on the northern part of Plum Island, which exhibit fixed lights, 54 feet above the sea, visible 15 miles.* If coming round Cape Anne, and at about 2 miles to the northward of the Dry Salvage Rock, before-mentioned, bring it to bear S.E., and steer N.W., 4$\frac{1}{2}$ leagues, which will lead to Newbury Bar. In running for the bar from the eastward, strangers should not approach near Hampton Harbour, as off its mouth lie several sunken rocks.

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* *Plum Island* is situated between the mouth of Merrimack River on the north, and Ipswich Bay on the south; and is separated from the main land by a narrow sound. Its length is about 8$\frac{1}{4}$ miles, and its width, from the sea to the main, not more than 500 paces. On the north end of the island are the lighthouses, which are constantly lighted at night, and so con-

If you advance no farther westward than for the lights on Plum Island to bear S.W., no danger is to be apprehended from either of the rocks above-mentioned; but that course to the bar would lead to the North Breaker: you must, therefore, bring the lights to bear W. by S., and anchor in 11 or 12 fathoms water, should the tide not permit you to sail in. No vessel going in should approach the South Breaker nearer than in 7 fathoms; or nearer the North Breaker, in coming from the eastward, than 9 fathoms. Pilots are always ready when the weather will permit them to go out; but if they cannot get out, you must keep the two lights in a line, and run for them until within a cable's length of the eastern light, when you must haul to the westward, and anchor between the two lights, in 4 fathoms. Vessels drawing 10 feet water may come in at two-thirds flood; always observing to keep to windward of the bar, unless the wind be fair. If the sea should be so great that the pilot cannot get over, then a signal will be made by him, when you must run direct for his boat, keeping the lights in range, which will carry you over in safety. Or you may bring the western lighthouse S.E. by S., and run N.W. by N. for Salisbury Point; but, so soon as you make that point, you must haul up N.W., which will carry you clear of Badger's Black Rocks and the Hump Sands.

Across the channel, from the Hump Sands to Black Rock Creek, lie seven or eight piers, on which are from 7 to 2½ feet at low water: they were sunk in the year 1776, and still remain. The mark to pass between them is, to bring the beacon at the west end of the town over the south corner of the North Meeting-house.

Rocks, &c.—The *Hump Sands* lie S.W. from Salisbury Point, which renders the channel very narrow and difficult for strangers. The *Badger Rocks* bear N.W. ½ N. from the lighthouses, distant half a mile: they are covered at two-thirds flood, and are to be left on the starboard hand when going in. The *Black Rocks*, which are always dry, lie three-quarters of a mile N.W. from the lighthouses: these, also, must be left on the starboard hand. The *Half-tide Rocks* bear W. by S. ½ S. from the Black Rocks, at the distance of a mile and a half: they are uncovered at half-tide, and have a buoy on them, which is to be left on the port side. Besides these there are the *North Rocks*, which are to be seen only at very low tides, and which bear W. by S. from the Black Rocks, from which they are one mile and a half distant: there is a buoy on them, which is to be left on the starboard hand; the channel lying between these and the Half-tide Rocks. When you pass the Black Rocks, a W. by S. ½ S. course will bring you in the channel-way, and good anchorage; and, even in the night or dark weather, when you may judge yourself at about half a mile from the Black Rocks you may anchor in safety. It is always dangerous to run for this port in a gale of easterly wind.

Signals, &c.—The signals for vessels when in sight, and supposed to be bound for Newbury Port, at the time when the sea is so great on the bar that pilots cannot get out to their assistance, are as follow:—

When a vessel comes into the bay, and cannot get over the bar at high water, owing to insufficiency of the tide, a red square flag will be hoisted up, with a pendant under it; and, so soon as these signals are seen from the vessel in the bay, she must keep off, and try some other port.

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structed as to be easily moved; a circumstance requisite from the frequent shifting of the bar at the mouth of Newbury Port Harbour. This bar is probably formed by the current of the river, in its progress out, meeting the drift of the sea and opposing winds, and by that means forming a bank of loose sand, which the strength of the tide is insufficient to force out. It extends across from Plum Island, and about a mile below the lights, to Salisbury Beach. The channel over it is extremely narrow, and terminated on each side by very dangerous shoals; that on the north, named the North Breaker, and that on the south, the South Breaker. The lighthouses are always so situated as to be brought in range when coming over the bar; and as, by the violence of winds or tides, the bar shifts, the lighthouses are shifted to conform to it. By keeping the lights in one, vessels may, by day or night, come in with safety, and find good anchorage, in 4 or 5 fathoms water, abreast or between the two lights.

That part of the island bounding on the sea, and extending above half its width, consists entirely of yellow sand, perfectly smooth on the beach, but, farther from the sea, driven by the wind into hillocks, or heaps of fantastic forms, and preserved in that shape by the successive growth of grass and shrubs. On the back part of the island, where it is washed by the sound, is an extent of salt-marsh, bounding its whole length. At the southernmost end of the island there are several houses, with families, and a considerable spot of land in good cultivation. To the northward is a grove of pine-trees, of 1½ mile in extent.

When the usual signals for vessels are kept up, the ship must lay off and on, without the bar, keeping to windward until signals be made for her to come in; and when it is a suitable time to come over the bar, a red square flag will be hoisted half-mast; she may then come in, keeping the lights in a range or in a line.

When a pendant is hoisted half-mast, the vessel may come in, keeping the lights a little open to the northward.

When a blue burgee is hoisted half-mast, the vessel may come in, keeping the lights a little open to the southward.

When a vessel is seen in the bay, and does not get in before night comes on, the following lights will be made:—

For a vessel to keep off, and not to attempt to come in over the bar during the night, a lantern will be hoisted to the top of the flag-staff.

When there is proper time for a vessel to come in over the bar during the night, two lanterns will be hoisted, one at the top of the flag-staff, and the other half-mast high. The vessel must then lay off and on at the bar until a light is made in the eastern lighthouse, at a window about 8 feet below the lantern. The vessel may then come over the bar, keeping the lights in a line; and when she gets abreast of the upper light, there is good anchorage.

The signal for vessels in distress is a white square flag, with a large black ball in the centre, hoisted half-mast high.

Remarks.—It has been already mentioned that the bar of Newbury Port is liable to shift in any severe gale of wind, from which cause no dependence can be placed on any directions for the harbour for any length of time. It will, therefore, be always necessary to have the assistance of a pilot in running in; and, indeed, no prudent seaman would attempt to make this port without one.

The Marine Society of Newbury Port erected, some years since, at their own expense, several huts, at proper distances from each other and from the shore, and supplied them with fire-works, fuel, straw, &c.; but owing to the strong winds driving the sand from their foundations, and the inhuman conduct of people who visited the island in summer, these huts were in a few yeays totally destroyed. The misfortunes attending this generous and humane attempt in favour of the shipwrecked mariner, deterred the Marine Society, as well as other bodies and individuals, from a like benevolent attempt, until the establishment of the Merrimack Humane Society in 1802. Conceiving it absolutely necessary that some relief should be afforded the unfortunate sufferer on so desolate a spot, and in the most inclement season of the year, the Society voted to build three huts on the island, and have carried their generous resolutions into full effect. The exertions of this benevolent Institution will be, in future, to preserve these huts in repair, and in perfect supply of materials for fire, and other necessaries for the support and preservation of life. Many, no doubt, will owe their lives to the humanity of this design, and with grateful feelings contribute themselves to the preservation of others. The expense and trouble will be trivial in comparison with the noble purposes it may answer; and the hope of its answering these purposes, will be alone a sufficient remuneration to the generous projectors.

From the report of a Committee, appointed by the Society, we have the following description of the huts, and directions to the mariner where to find them:—

"The house for the keeper of the lights, erected by the United States, is about 20 rods south from the lighthouses. About 2500 paces, or $1\frac{1}{2}$ mile south from this house and the lights, on the inside of the island, is the first hut, to which the mariner, in day-light, may be directed by a beacon, about 300 paces to the east, with a hand pointing to the hut.

"2900 paces, or about $1\frac{3}{4}$ mile south from this, is the second hut, with a similar beacon, about 400 paces, S.E., pointing to it.

"1700 paces, or about a mile south from this, is a third, with a beacon, bearing East, 500 paces distant.

"5000 paces, or about 3 miles south of this, is a house, occupied by Mr. Spiller and family, which is about a mile from the south end of the island; and about West, a mile from the south end of the island, are two other houses, with families.

"These huts, together with the other houses mentioned, form a chain from one extremity of the island to the other. The unfortunate mariner, whose fate may wreck him on this shore, can, by noticing the point of the compass from which the wind blows at the time of his being wrecked, be governed in his course across the island, where he will find himself under the lee of the higher land, and protected in some

measure from the violence of the tempest. By keeping along the margin of the island, where the travelling is good, and before coming quite to the marsh, either north or south, he will be certain of meeting with one of these huts or houses, where he may find temporary relief. To facilitate still further the means of conveying immediate assistance to those unfortunate mariners who may be wrecked on this island, a number of gentlemen were incorporated for the purpose, and have completed a bridge and turnpike road from Newbury Port to Plum Island. This road leads in a south-easterly direction from Newbury Port, and the bridge crosses Plum Island nearly about a quarter of a mile to the S.W. of Seal Island. An elegant hotel has been erected at the east end of the bridge, within 100 rods of the sea-shore, a mile south from the lights, and about three-quarters of a mile northerly from the northernmost house erected by the Merrimack Humane Society before mentioned. The hotel is painted white, has three white chimnies, and may serve as a land-mark for seamen.

"If a vessel, by stress of weather, should be obliged to run ashore on this island, and the master can make any choice of the place, it is most eligible to run on to, as nearly opposite this house as possible, as assistance and shelter can be more promptly afforded, and the communication will be more direct with Newbury Port.

"It rarely happens that any life is lost on this beach, in attempting to escape from the wreck, when the crew remain on board until low tide. Unless the vessed is in imminent danger of going to pieces immediately, the seamen should never take to their boat."

In a course nearly north from the lighthouses on Plum Island, and about half a mile distant, across the mouth of the Merrimack River, is the southern extremity of Salisbury Beach, named Salisbury Point. From this point a sandy beach extends northerly on the verge of the ocean, without an inlet or interruption of any consequence, until it reaches Hampton River. This beach is connected with the main land by a salt-marsh, of considerable extent, intersected by a variety of small rivulets and creeks, which render it impossible for a shipwrecked mariner to reach the inhabited part of Salisbury. Here, too, the hapless mariner is sometimes destined to suffer the misfortunes of shipwreck, and to reach a desolate and inhospitable shore, only to aggravate the horrors of his death. If he can attain the first and wished-for object, in escaping from the dangers of the ocean, yet he finds himself a solitary wanderer on the coast, without shelter or sustenance; and, in his fruitless search for them, must inevitably perish.

As the N.E. storms are generally most fatal to vessels on this part of the coast, Salisbury Beach is not so frequently a place of shipwreck as Plum Island. But to guard against a possibility of accident, which must sometimes happen to the unskilful or inexperienced navigator, the Marine Society erected a hut, similar to those on Plum Island. Here they deposited everything necessary for the relief of such as might need it, and were at the pains and expense frequently to inspect it, and renew their generosity by replenishing it: but this has shared the same fate with those on Plum Island; not so much, however, from the insufficiency of its foundation, or the violence of the winds, as from the wantonness of individuals and companies, who frequent this this spot, in the warm season, on parties of pleasure. The Merrimack Humane Society have extended their benevolent views to this part of the coast, and have erected a hut about three-quarters of a mile north from Black Rocks, so named, and about 150 paces from the sea-shore. This hut will be maintained in commodious repair, and provided with everything suitable for those who may be so unfortunate as to need its shelter. Others, on the same coast, will be erected as speedily as the funds of the society, and the charity of individuals, will render it possible, and will be conveniently furnished and provided for the same laudable purpose.

IPSWICH.—The mouth of the Ipswich River is situated at the south end of Plum Island, and a long bar extends for $1\frac{1}{2}$ mile E.S.E. from the S.W. point of Plum Island, which causes the channel to be along the south side. Patches Beach on the south side is distingnished by two lighthouses which show lights at 40 feet, being distant from each other 500 feet, and bearing the one from the other W. $\frac{1}{4}$ N. and E. $\frac{1}{4}$ S. The western light revolves, the eastern one being fixed. The lights in one lead over the bar, passing a little to the south of the buoy. Run in close to the beach, and follow it close up, to avoid the northern spit on the starboard hand; run up round the first high bluff head, where you will find safe anchorage. There are 8 feet on the bar at low water.

ANNIS SQUAM, in the south part of Ipswich Bay.—On Wigwam Point, at the

entrance to this harbour, is a lighthouse, painted white, containing a fixed light about 50 feet above the level of the sea. This light is of great importance to those who are driven into Ipswich Bay in an easterly gale of wind: for Annis Squam affords a safe harbour to those who know the bar, over which there are 16 and 17 feet at high water.

The bar of this harbour bears from Hallibut Point (the N.E. point of Cape Anne) about S.W. by W. $3\frac{1}{2}$ miles. In running for Hallibut Point, be cautious of Plum Cove Ledge, which shows itself until nearly high water, and bears from Squam light N.N.E. a little northerly, about five-eighths of a mile. Passing this ledge, you leave Hodgkin's Cove, which is deep, and a long point of land, named Davis's Neck, on your port hand. When up with this neck, haul S.W. or S. W. by W. for Squam Bar. In sailing into this harbour, bring the light to bear due South, and when at the distance of a mile from it, run directly for it, leaving Haradan's Rock, which lies N.E. by E. $\frac{3}{4}$ E. from the light, distant three-eighths of a mile, on your port hand. Continue your course until you are within 50 yards of the light, then haul up S.S.W. for the Bar Rock, leaving the lighthouse on the port hand.

The bar, which runs nearly N.E. and S.W., leaves the river about 90 fathoms broad, opposite to the light to the starboard. In running up, as here directed, you will leave the Lobster Rocks (which lie 200 yards S. by W. from the lighthouse, and dry at low water) on the port hand. When up with the Bar Rocks, which lie on the starboard hand, and are dry till nearly high water, steer S. by E. $\frac{3}{4}$ E. until you open the houses, and you may anchor in from $3\frac{1}{2}$ to 5 fathoms, clear sandy bottom; or run your vessel on shore, on the starboard side, should you happen to be without anchors and cables.

When the weather is so boisterous that boats cannot get off, a flag is hoisted on shore, near the lighthouse, so soon as there is a sufficient depth for vessels upon the bar, which may then run as above directed.

On the Lobster Rocks is a monument 17 feet high, 12 feet in diameter at the base, and projects 7 feet out of the water. It bears S.W. by S. $\frac{1}{2}$ S., a quarter of a mile, from the lighthouse on Wigwam Point. There is a black buoy placed outside the bar, bearing N. $\frac{1}{4}$ E., $1\frac{1}{4}$ mile, from the monument, and a white buoy on the Haradan Rock bearing N. by E. $\frac{1}{2}$ E., $1\frac{1}{4}$ mile from the same; and also a red buoy off the Plum Cove Ledge, in 3 fathoms, N.N.E., $1\frac{1}{2}$ mile, from the monument.

At about $2\frac{1}{2}$ miles, E.S.E., from Hallibut Point is a dangerous group of rocks named the Salvages, which bear nearly N. by E. from the lighthouses on Thatcher's Island. Between them and the shore there is a passage, but as there is a great necessity for a survey of this part of the coast, it is recommended at all times to give them a wide berth.

SHOALS OFF THE STATE OF MAINE.

From Cape Sable to Cape Cod the distance and course are about 70 leagues, W. by S. In steering this course you will pass about 12 leagues to the southward of the Fippenies and Cashe's Ledge, and pass to the northward of the George's Banks.

FIPPENIES.—When sailing to the eastward from Thatcher's Island you will, after running a distance of 17 or 18 leagues, get soundings upon a bank 8 or 10 leagues in extent, named the *Fippenies*, which has a north and south direction, and is only about 6 miles in width. Upon this bank the soundings vary from 30 to 40 fathoms, and there are 80 and 90 fathoms close-to on its eastern side, deeping to 100 and 130 as you run to the south-eastward. The longitude of this bank is 69° 25′ W., and it is stated to run from lat 42° 40′ to 43° 3′ N.

CASHE'S LEDGE.—This ledge lies about 15 miles to the eastward of the Fippenies, and is situated on a bank of 20 to 40 fathoms water, the extent of which is not well ascertained. On the eastern side of this bank you will soon get into deep water, and there are from 80 to 90 and 100 fathoms between it and the Fippenies. What renders Cashe's Ledge so dangerous is a flat white rock, in extent about 300 feet, which is situated on the eastern edge of the bank, and has 26 feet, or less water, upon it. South of this rock there is said to be a gully of 90 fathoms water running in upon the bank in a south-westerly direction, upon the south side of which, at 3 miles to the southward of the flat white rock, there is a shoal of 7 fathoms, having

immediately around it soundings shoaling suddenly from 15 to 30 fathoms on all sides except the east, when it deepens suddenly to 80 and 90 fathoms.

At about 9 or 10 miles to the N. by W. of the flat white rock, and separated from it by soundings of 10 to 35 fathoms, rocky bottom, there is a shoal of 11 to 14 fathoms, bottom of kelp.

Cashe's Ledge has been described by several navigators; but, until sought for by Commander Davis, of the U.S. Navy (a copy of whose report is given subsequently), its position was not very accurately ascertained. Commander Owen, R.N., a few years since, ran a line of soundings of 40 to 45 fathoms across the bank, in a northwesterly direction, but was unsuccessful in finding the 26 feet rock, although we believe his search was repeated several times.

The following description of Cashe's Ledge by the Master of H.M.S. Beaver was written some years since:—"I took my departure from Thatcher's Island to the eastward of Cape Anne. The island bore North from me, distant 3 miles. From this bearing I steered E. $\frac{3}{4}$ N., with a fair wind, 65 miles, and fell in with the bank where Cashe's Ledge is, about 2 leagues to the northward of the shoal, in 60 fathoms water, hard black clay. This bank extends from North to South 7 leagues, and from East to West 2 leagues. In the middle of the bank is the shoal mentioned: its length and breadth is about half a mile. It is rocky, and its soundings very irregular, having from 10 to 4 fathoms in the length of a boat. You will have 17 fathoms of water within a cable's length of it, deepening as you stand from it, to 90 fathoms. As you approach the bank, you sound in from 60 to 35 fathoms, brown sand, with black stones and broken shells; then in 30 fathoms, it grows rocky. The current on the ledge is exceedingly rapid and unaccountable. If the wind blows strongly, any vessel would founder, although she should not strike on it. The situation of the ledge, by four days' good observation, is lat. 43° 1′ N., long. 69° 6′ W. As this is a very dangerous shoal, all ships should endeavour to keep clear of it. On the shoalest part are only 12 feet at low water."

It has since been said by Mr. Backhouse, Master of H.M.S. Argonaut, that this ledge extends north and south 7 leagues; the shoalest part being near the centre of the bank, extending a quarter of a mile each way. The ledge, he observes, bears from Cape Anne E. $\frac{1}{2}$ N., 24 leagues, the shoalest part being in the latitude abovementioned. "You will have," he adds, "on this part from 10 to 4 fathoms, very irregular soundings, all rocky bottom. The current shifts all round the compass every hour, and runs at the rate of 2 miles an hour."

Commander Charles H. Davis, Superintendant of the United States' Survey, makes the following report relating to the position of the rock at Cashe's Ledge, dated June 8th, 1849; hence we may consider that the locality is now fully determined:—

"The U.S. steamer Bibb remained at anchor on the rock from 5 o'clock on Tuesday, to 5 o'clock on Wednesday afternoon, during which time the boats were employed in repeated examinations of the surface of the rock. The sea was smooth, the wind west, the weather perfectly clear, and the southern and western horizons well defined.

The latitude was determined.

First, by the meridian altitude of the moon with three observers, whose readings differed from each other less than half a minute. The meridian passage occurred at twelve minutes past midnight; the declination of the moon was $17\frac{3}{4}°$ south, which, the night being remarkably cloudless, secured a distant horizon.

Second, by a meridian observation of the sun, with four sextants, the readings of which differed in the extreme but one minute. The latitudes given by the sun and moon differ from each other but one mile. The longitude was determined by three chronometers, from Messrs. Bond and Son, which were taken on board on Monday, and returned on Thursday; and were proved by the final comparisons of Thursday to have run correctly. Twenty-five observations, taken on the 5th and 6th, were used to ascertain this element, the mean of those of the 5th differing from that of the 6th by only a second of time. Several sets, not employed in obtaining the reported result, were also taken for confirmation. Not being absolutely required, they were worked out with less care.

The latitude of the rock, by the meridian observation of the sun, is 42° 56′ N.

The longitude, the mean of both days, is ..... 68° 51½′ W.

The latitude and longitude of this rock, recently given by the best authorities, are 42° 44′, and 69° 03′, the former differing twelve miles, and the latter twelve miles, from the Coast Survey determination. Formerly the latitude and longitude of this spot

were laid down as 43° 04′ and 69° 11′, the former 8 and the latter 20 miles in error. These errors, particularly in latitude, give additional value to our determination, and render its early announcement important to navigators. The least water on this rock is twenty-six feet; a less depth has been reported by the fishermen, but they sound with their fishing lines, not accurately marked, and having on them a lead of $3\frac{1}{2}$ pounds only; not heavy enough to press down or pass through the thick kelp that covers the rock. The extent of rock, having 10 or less fathoms on it, is about half a mile in a N.W. by W. and S.E. by E. direction, and very narrow. It is surrounded by deep water at a short distance, particularly on the south-east side, where the depth increases suddenly to 60 fathoms.

It is my wish that this should be called Ammen's Rock, in compliment to the officer by whose exertions, last summer, the means were afforded of discovering and correctly determining its position at this time."

JEFFERY'S BANK.—This is an extensive deep-water bank, of 30, 40, 50, and 60 fathoms, 16 leagues in length N.E. and S.W., and 3 leagues in breadth; it is generally represented in the charts as commencing close to the southward of Mount Desert Rock, and extending to about the longitude of 68° 45′ West. Outside of the bank the water deepens to 70 and 80 fathoms, and between it and the shores of America are 100, 70, 60, and 55 fathoms; on or about it there is no danger whatever.

ST. GEORGE'S BANK.—This bank was regularly surveyed in 1821, under the orders of Captain Isaac Hall, by the U.S. schooner Science, and the sloop Orbit. The following is a copy of the report:—"There are properly four shoals on St. George's Bank; the whole of them are included between the latitudes of 41° 34′ N. and 41° 53′ 30″ N., and longitudes 67° 18′ W. and 67° 59′ W. Between them are 15 to 35 fathoms of water.

The largest, and on which is the greatest danger, is the most southerly and westerly. It is somewhat triangular, with a long and narrow spit running out from the S.E. angle. The S.E. point is in latitude 41° 34′ N., and longitude 67° 40′ W. The west point is in latitude 41° 42′, and longitude 67° 59′. The N.E. point is in latitude 41° 48′ N., and longitude 67° 47′ W. The eastern side of this shoal, although somewhat irregular, runs nearly S S.E. and N.N.W., having on it from 3 feet to 9 fathoms at common low water; it is composed of a great number of sand spits, very narrow, so that the width of a narrow vessel will make several fathoms difference in the depth of water. The general range of the spits is from S.E. to N.W. As there are no rocks, they are, consequently, liable to change, in some measure, their position and ranges. On their eastern edge, even in calm weather, unless it either be high or low water, the tides run with great rapidity, and form considerable breakers, when setting to the westward. This is accounted for by a knowledge of the fact, that directly on the edge of this shoal there are from 12 to 16 fathoms of water, so that the edge forms a sort of dam, stopping the force of the flood-tide, and over which the ebb falls.

When there was any considerable wind, we observed that the breakers were higher within the edge to the westward than on the edge; and I have no doubt that the water there was still shoaler, and that we should have seen the sand had it not have been for the heavy sea. The breakers were such, unless it were entirely calm, that it was impossible to go among them with boats; nor was it considered safe to attempt with vessels. For besides the danger of striking on the hard sand spits, the vessels would have been liable to have been filled by the breakers. Even on the eastern edge, and at nearly slack water, the vessels were, at times, nearly covered with them. It was, therefore, not thought necessary to attempt it, as the object of the survey—to ascertain if there was danger on the shoals, and the situation and extent of this danger, —could be accomplished without the risk. Had not the sea been very smooth, and at high water, we should not have been able to have got on where we found only three feet, when reduced to low water. The prevailing wind was to the eastward; and I have no doubt that this place would have been bare, with any continuance of an off-shore wind. I think there are no rocks about the shoals. We had one cast on the S.W. side, which indicated rocky bottom, in 15 fathoms; but I believe it to have been some sharp stone that the lead struck upon.

The centre of the northern shoal is in latitude 41° 53′ 30″ N., and longitude 67° 43′ W. It extends east and west, about 4 miles; the shoalest part, having 6 fathoms, is very narrow, and composed of hard sand; but there are not more than 12 fathoms of water for three miles to the southward of the above latitude. On the north side, at two cables' length from the shoal, the sloop dropped into 33 fathoms. The breakers

on this shoal are very heavy; and when there should be a sufficient sea to endanger a vessel, they might be seen some miles, and heard at a considerable distance; and as the shoalest part is not more than a cable's length inside, and no danger near it, a vessel might avoid it.

To the eastward of the last-mentioned shoal, in lat. 41° 51′ N., and long. 67° 26′ W. is another small shoal, with 8 fathoms water, having, however, considerable breakers. There are but 17 fathoms for three miles to the northward of it; but very near to the eastward are 31 fathoms, and from 20 to 30 fathoms to the south and west.

The centre of the east shoal is in lat. 41° 47′, and long. 67° 19′. It is about 2 miles long from east to west, and has seven fathoms water. To the southward there are but 17 fathoms for two miles; but in other directions there are from 20 to 30 fathoms.

The above shoals, I am confident, are all which are on St. George's Bank; their positions and sizes may be relied on, as well as the soundings which I have laid down; they were ascertained by a vast number of celestial observations, taken with good and well-adjusted instruments, on board the two vessels, and very carefully calculated. The rates of the chonometers were found by a transit instrument previously to sailing from Boston, and after our return; and all our observations recalculated for the small variation that appeared.

At anchor, in different places, and on different days, we determined the set and strength of the tides, and as nearly as possible, their rise and fall. The rise of them is from 1 to 1½ fathom. They set round the compass every tide, setting S.E. every full moon, and running from 1 to 4 knots per hour, at a mile's distance from the breakers. The main rate is, however, materially varied by the winds. They set strongest at W.S.W. and E.N.E., and which is, undoubtedly, the strength of the flood and ebb. From these causes and variety in the tides, arises a principal danger in approaching the shoals When under-way about the shoals, in a few hours' time we found ourselves drifted far out of our reckonings; and to ascertain our situations, when both vessels were under-way, we took continued observations for the longitude by the chronometers, and, at the same time, double altitudes for the latitudes; which latter were calculated by Brosius's new and certain method. By allowing for the set of tides, as ascertained at anchor, the observations and reckonings agreed very nearly, so that the latitudes and longitudes of every place may be considered as certain. Should, therefore, any vessel fall in with these shoals, a knowledge of the course and strength of the tides will prove of the greatest importance; and they can, by the preceding facts, be calculated for any day and hour.

In proceeding from Cape Cod to the shoals, at five leagues from the light, there are 86 fathoms, muddy bottom. The water gradually deepens to 133 fathoms, and then decreases towards the shoals. In latitude 41° 51′ N., and longitude 68° 11′ W., there are 90 fathoms; in latitude 41° 50′, and longitude 68° 3′, there are 49 fathoms, sand and gravel, on the western edge of the bank; the water then shoalens fast; to the northward of the shoal, in latitude 41° 59′, and longitude 67° 52′, on the south side of the north channel, there are 60 fathoms, soft mud; in latitude 42° 12′, and longitude 67° 51′, there are 102 fathoms; in latitude 42° 10′, and longitude 67° 18′, there is no ground at 175 fathoms. To the eastward we did not ascertain the extent of the bank. At two miles southward of the S.E. point of the shoals, there are from 20 to 26 fathoms, which soundings continue 20 miles to the southward and westward. The bottom on the bank, so far as we examined it, is of such a narrow character, that it is difficult for a vessel to ascertain her situation by it; we often found a great variety of soundings, in a very short distance, such as sands of various colours, and differently mixed, coarse and fine gravel, pebbles of various colours, stones, sponge, and shells.

Notwithstanding this variety, some general character of the soundings may be useful. The mariner, therefore, will find to the westward of the shoals, and at some distance from them, the bottom to be coarse sand and gravel of all colours : to the N.W., a mixture of white, black, and yellow sand; to the north, black and white sand; to the N.E., chiefly gravel and pebble; to the east, fine white and yellow sand; and in latitude 41° 57′ N., and longitude 66° 40′ W., some white moss; to the S.E. fine white and yellow sand; and to the south, generally white sand. As the shoals are approached, in whatever direction, the soundings become coarse, and are frequently mixed with shells of different kinds. Near the shoal much of the bottom is pebbles; and to the east of the largest and most dangerous shoal, there are stones the size of hens' eggs, with moss and sponge on some of them.

Near the S.E. point are from 15 to 20 fathoms; a prevailing character of the sound-

ings is green shells, chiefly of the species called sea-eggs. If a vessel be far enough south to avoid danger, she will have no shells. The reports that rocks have been discovered on these shoals, are undoubtedly incorrect: at the western part of the bank we saw, in strong tide rips, large quantities of kelp and sea-weeds, which, at a distance, had the appearance of rocks, but on sounding we found good water and a regular and clear bottom.

It will be seen, by the bottom, that the holding-ground is not good; but the vessels employed in the survey, by having a long scope of cable, frequently rode out a considerable gale of wind, for twenty-two hours, on the east side of the main shoal, and also to the windward of it; the sea breaking very high at the time, we being in 10 fathoms water. It may be worthy of remark that, at one cast of the lead, on examining the arming, I found one-third black sand, one-third white sand, and one-third green shells, in as distinct dimensions as they could be drawn."

This bank was again surveyed in 1837 by Commander Charles Wilkes, of the U.S. Navy, and from his report it would appear that the two shoalest spots are in lat. 41° 40′ 13″ N., long. 67° 44′ 10″ W., and lat. 41° 40′ 33″ N., long. 67° 44′ 30′ W., and that these consist of knolls of hard sand, having on them at low water only $2\frac{1}{2}$ fathoms, or 15 feet. Mr. Wilkes says in his report that "the whole of the shoal is composed of hard sand spits—fine sand on the shoalest places, and coarser as the water deepens, until it becomes large pebbles without sand.

"The rise and fall of tides is 7 feet, extremely regular, the first part of the flood setting N.N.W., tho latter part N. by E., and the ebb S.S.E. and S. by W. The flood runs $4\frac{1}{2}$ hours, ebb $5\frac{1}{2}$ hours; greatest velocity two and six-tenths of a mile, from half an hour to two hours in changing, going round with the sun on from north by way of east. The wind has but little effect on the velocity. High water, full and change, at 10h. 30m. Variation of the compass 8° 15′ W."

From this survey it would appear that the shoal is about 14 miles long and $1\frac{1}{2}$ to 2 miles broad, the soundings being generally from 6 to 8 and 10 fathoms. As noticed above, the sea sometimes breaks heavily on it.

The Little George's Bank, having only 5 fathoms, and which breaks in heavy weather, is in latitude 41° 11′ N., and about longitude 68° West, being about S.W. by S. from the great shoal of George's Bank. The fishermen have given it the above name.

A bank, named upon the chart "Clark's Banks," has been discovered a little to the westward of the George's Shoal, and 10 to 20 fathoms water have been found upon it; this is said to be in latitude 41° 34′ N., longitude 69° 15′ W.

In coming from the southward for George's Bank, you will get soundings in latitude 40° 4′ N., if on the S.S.W. part of the bank. Should you not get soundings in latitude 40° 30′ N., you may be certain you are to the eastward of the shoal, when you must direct your course accordingly to clear it; when your first soundings will be in 75 to 60 fathoms. When steering to the northward, you will shoal your water gradually to 20 fathoms, when you will be in latitude 41° 20′ N., which depth of water you will have 10 or 12 leagues distant, either eastward or westward.

FROM CAPE ANNE TO CAPE COD.

CAPE ANNE.—Cape Anne is of moderate height with trees on it, and may be distinguished by Pigeon Hill, which appears like a boat with the bottom upwards. This hill is about a mile south of Hallibut Point.

Upon Thatcher's Island, which is about one mile to the east of the main land of Cape Anne, are two lighthouses, one-fourth of a mile apart, and bearing S. by W. and N. by E. from each other. The lanterns are 90 feet above the level of the sea, and both exhibit fixed lights, visible 7 or 8 leagues: in foggy weather a gun is fired to answer signals. Thatcher's Island affords no harbour, nor is there any safe anchorage near it. There is, indeed, a passage between it and the main, through which small vessels may pass even at low tide, but the water is shoal, and the bottom filled with large stones. So soon as the lights are discovered, you will be certain of your situation; for being two separate lights, they cannot be mistaken for the single light at Boston, or that of

Cape Cod, or for the Plymouth Lights, which are double, and within a very short distance from each other. The lights of Cape Anne are, therefore, of great utility to all vessels in their passage in or out, as they at once serve to point out the situation of the Salvages and Londoner, and for a point of departure to vessels bound outward.

Thatcher's Island Ledge bears from the body of the island from E.S.E. to S.S.E., extending about 2 miles from the island. After getting the west light to bear N. ½ W., you are to the westward of the ledge; then haul up to the N.W., to bring the lights to bear N.E. by E., and steer S.W. by W. for the eastern point, distant 7½ miles from Thatcher's Island; then your course is W. by S., 7½ miles, from the lights on Baker's Island.

When you come from the eastward, and make Cape Anne lights in the night, bring them to bear S.W., and run direct for them, which course will carry you within the Londoner; and when you pass the said rocks, bring the two lights in one, bearing N. by E. ¾ E., and then steer S.S.W. ¼ W.; keeping this course about a mile, will carry you clear of Milk Island, which is very low, and cannot be seen on a dark night. When you judge yourself to the westward of this island, then haul to the westward until you bring the lights to bear E.N.E., when you must steer W.S.W., about 5 miles, which course will carry you to the eastern point; when you pass this point, keep on W.S.W., until you bring Norman's Woe, which is the highest land on the north side of the harbour, to bear N.N.W., and run in N.N.W., until you shut the lights in; then N.N.E. will carry you safely in.

If you want to go inside the Salvages, keep close on board Hallibut Point, which has a tree on the eastern part of it, and S.S.E. for Straits Mouth Island; but be careful to avoid Avery's Rock by keeping the lights on the dry point of Straits Mouth Island, till you get close on board; then haul round the point, and E.S.E. will carry you to the lights. To avoid the Londoner keep the lights close on board the body of the island, on which they stand. The Londoner lies half a mile off; it breaks at all times, is quite dry at low water, and bears E.S.E from the middle of Thatcher's Island. A long shoal runs off N.E., half a mile, from the Londoner. Between Thatcher's Island and the Londoner are 3 fathoms at low water. From the Salvages to Halibut Point and Sandy Bay lies a large spot of flat ground, which at low water will take up a large vessel. Outside the Salvages is very bold. Halibut Point bears from the Salvages W.N.W., 2½ miles; and the Salvages bear from the lights N.N.E., 3 miles distant.

At about 7 to 10 miles from Thatcher's Island, in an East or S.E. direction, there are several small stony spots with 10 to 18 fathoms upon them. Inside these spots there are 25 to 30 fathoms.

SANDY BAY.—This is a small bay immediately to the northward of Cape Anne. If from the southward, in passing outside Straitsmouth Island, be careful of Avery's Rocks, which bear North from the eastern part of the island, about one-third of a mile; run W. by N. until you bring the Meeting-house to bear S.W. by S., then run in for the pier-head: in approaching which, keep away a little, and run in until you can see into the pier-head; then luff, and round in. Those constantly in the habit of entering the said pool, when the wind is easterly, make up the head sails, and keep up the main-sail, which enables them to have command of the vessel, and avoid falling off against the wharf built out from the beach. If from the northward, after having passed Andrew's Point, bring the Meeting-house to bear S.S.W., and run for it. This course will carry you clear of Dodge's Ledge, which you will leave on your starboard hand.

The passage through Straitsmouth Gap is not safe, except at nearly high water, as there are but 3 feet at low water, and rocky bottom.

At Straitsmouth Harbour there is a small lighthouse on an island immediately to the northward of Cape Anne, which shows a fixed light at 40 feet above the sea, visible 13 miles.

GLOUCESTER HARBOUR.—The entrance to this harbour lies about 5 miles to the south-westward of Cape Anne. In sailing from off the lights on Thatcher's Island, to Gloucester Harbour, you will open Brace's Cove before you come up with the harbour, which will, when open, bear N.N.W. On a small island, within the harbour, named Ten-pound Island, there is a lighthouse, showing a fixed light, 45 feet above the level of the sea.

On the east point of Gloucester Harbour is a fixed light at 57 feet, visible 20 miles. In rounding the point give it a good berth before bearing up for Ten-pound Islet.

The entrance of this harbour is 1½ mile broad, between the East Point and Ledge, on one side, and the high land named Norman's Woe, on the other.

Vessels bound for Gloucester Harbour, and falling in to the eastward of the eastern point, must give that point a berth of nearly a mile, and when the light on Ten-pound Island bears N.N.E. you will be to the westward of the ledge that extends off that point, on which is a spar-buoy, lying in 10 feet at low water, and bearing from Ten-pound Rock E. $\frac{1}{2}$ S., and may proceed directly for the light. Running on this N.N.E. course you will go between Ten-pound Island and the Ledge, and have 13 to 15 feet at low water, springs: the east end of Ten-Pound Island is foul, and affords no safe passage, but the south, west, and north sides are bold, and may be approached within the distance of 40 or 60 fathoms when the water is low; give the west end of the island a berth of from 50 to 70 fathoms, and steer N.E. for the Inner Harbour. You may anchor at any distance, from 100 fathoms to three-quarters of a mile from the island, the light-house bearing from S. to S.W. in 6, 5, 4, or 3 fathoms, low spring tides, and muddy bottom; this inner harbour being safe from every wind.

The *Half-way Rock* is 180 feet in diameter, 40 feet high, and bold-to, lying to the eastward of Marblehead, about $2\frac{1}{2}$ miles from the nearest land, and half-way between the lighthouses of Boston and Thatcher's Island. It is now distinguished by a pyramidal beacon, the stone work of which is 15 feet high, with a base of 10 feet, and above the stone work there is a spindle 15 feet high, on which is a copper ball, 2 feet in diameter. The Half-way Rock bears from the light on Ten-pound Island S.W. $\frac{1}{2}$ W., distant 8 miles.

Vessels bound for Gloucester Harbour and falling in to the westward, so far as Half-way Rock, should take care not to bring the light on Ten-pound Island to bear to the eastward of N.E. by N., until you are a mile or a mile and a half to the eastward of Half-way Rock, in order to avoid the S.E. Breaker's running off Baker's Island; these breakers bear from the lights on Baker's Island S.E. $\frac{1}{2}$ E. to S.S.E. $\frac{1}{2}$ E., distant two miles and a quarter. On the S.E. part of these breakers is a black spar-buoy, bearing from Half-way Rock N.E. by E., distant one mile. When you have passed to the eastward of these breakers, you may then bring the light on Ten-pound Island to bear N.E., and run for it. On this course you will leave Ten-pound Ledge on your starboard side, and the ledges off Norman's Woe Rock and Freshwater Cove on your port side; and, when you arrive at Ten-pound Island, anchor as before directed.

The outer harbour of Cape Anne is safe, and affords good anchorage against a northerly or east wind, in $7\frac{1}{2}$ to $6\frac{1}{2}$ fathoms, muddy bottom, the lighthouse bearing S.E. by E. In the S.E. harbour there is also good and safe anchorage, with the light from N. by E. to N.N.W., in 9 to 6 fathoms, muddy bottom, distant from the light one-eighth to half a mile.

The several shoals within the harbour are marked with buoys as follow:—A spar-buoy with red head, in 10 feet on the ledge off the eastern point, bearing S. by W. $\frac{1}{2}$ W. from the light, and about half or three-quarters of a mile from the shore. A spar-buoy with black head, in $2\frac{1}{2}$ fathoms, on the Round Rock, bearing S. W. $\frac{1}{2}$ S. from the light, distant $1\frac{1}{8}$ mile. A spar-buoy with black head, in 2 fathoms. on the Cove Ledge, bearing W. by S. half a mile from the light. A spar-buoy with white top, in 2 fathoms, on the Dog Bar Ledge, of large rocks, bearing S. by W. $\frac{1}{2}$ W., $1\frac{1}{4}$ mile, from the light.

A large high rock, of 20 to 30 fathoms in diameter, stands about 30 fathoms off Norman's Woe Point; and in a southerly direction, about 100 fathoms from this rock, is a ledge having only 7 and 8 feet water at low ebbs. About one-quarter of a mile from Freshwater Cove is a ledge, of only 3 feet at low springs, which bears from the light W. $\frac{1}{2}$ N., distant nearly 2 miles. At $1\frac{1}{2}$ mile, S.W. by S., from Baker's Island, and one-sixth of a mile, N.W. by W. $\frac{1}{4}$ W., from Half-way Rock is Satan's or Black Rock, which is above water and steep-to.

In Gloucester Harbour beacons have lately been placed on Five-pound Island Point, the Harbour Rock, and Black Rocks. That on Five-pound Island Point consists of a pyramidal beacon, weighing 8 tons, from the summit of which a shaft of iron projects, having a ball of iron at its end; that on the Harbour Rock is simply a shaft of iron, with a ball at the top; and that on the Black Rocks is a similar shaft of iron and ball, but it is much higher, and supported by four iron braces.

BEVERLEY AND MANCHESTER.—These harbours lie to the south-westward of Gloucester Harbour, and are passed when running for Salem. To enter the harbour of Beverley, the directions for Salem, hereafter mentioned, will do, until you bring the Haste to bear E.S.E., and run W.N.W., about 2 miles, and you reach Beverley Bar. This is a spot of sand running out from the southern or Salem side of the

entrance, and has usually a beacon upon the head of it, above a quarter of a mile from the shore. The bar has very shoal water on the eastern or outward side, near it, but good anchorage within. There is good water at the head or off the bar. Having passed the bar, there is a sandy point from the Beverley or northern side of the entrance; and beyond this point are the Lobster Rocks, which bear from the head of the bar W. a little S., and not half a mile distant, and are above water at half-tide. To avoid this point, after having well cleared the bar, you will steer towards Ram-horn Rock, which has also commonly a beacon, and is to be seen at half-tide, bearing S.W. by S. from the head of the bar, one-eighth of a mile distant. There are several fathoms of water within a vessel's length of Ram-horn Rock. Giving this a good berth, you will clear the sandy point, and steer for the Lobster Rock Beacon, bearing from Ramhorn Beacon N.W. by W. distant about a quarter of a mile. Passing this at sufficient distance, you will be opposite to the wharves, and may anchor in deep water, in a very safe and excellent harbour.

To enter Manchester Harbour, you must bring the southern light to bear S. $\frac{1}{2}$ E., and run North one mile distant, where you may anchor on good bottom.

Eastern Point bears from Baker's Island lights E. by N. $\frac{1}{2}$ N., $7\frac{1}{2}$ miles distant. Half-way Rock bears from the lights S. 2° E., 3 miles distant. Hardy's Rocks bear from the lights W. $\frac{3}{4}$ N., distant three-quarters of a mile.

SALEM.—The entrance of Salem Harbour is distinguished by the two fixed lights shown by two lighthouses on Baker's Island, which is about 5 miles east of the town of Salem. Baker's Island is small, having its north and east sides high and rocky, but has no landing-place, the water being deep near the island. The lighthouses are distant from each other 40 feet, and bear from each other N.W. $\frac{1}{4}$ W. and S.E. $\frac{1}{4}$ E. They both show fixed lights, of which the highest can be seen 6 or 7 leagues off. The lower lighthouse is 25 feet high and the higher one 46 feet: the southern light is the highest.

If bound into this harbour, and you fall in with Cape Anne, supposing Cape Anne lights to bear N.N.W. about 2 miles distant, you course will be W.S.W. about 3 leagues, then W. by S. $\frac{1}{2}$ S., 7 or 8 miles, which will bring you in sight of the lights on Baker's Island.

But should you fall in to the southward, when proceeding for the lights, you should, so soon as you have made them, bring and keep the northern light open to the eastward of the other, and thus run for them: this will carry you to the eastward, and clear of the south breaker of Baker's Island, which is very dangerous. On the S.E. part of these breakers is a spar-buoy, painted black, and which bears from the lights on the island S.S.E. $\frac{1}{2}$ E., $2\frac{1}{4}$ miles distant.

Should the wind be westerly, when beating up, you should not stand to the southward or westward farther than to shut one light in with the other; otherwise you will be in danger of the south breaker above-mentioned; neither stand to the northward farther than to bring the lights W. by S. $\frac{1}{2}$ S. or you will be in danger of Gale's Ledge a ledge which bears from the lights N.E. by E., $1\frac{3}{4}$ mile distant.

Misery Island is about a mile from Baker's Island, and joined by a bar to Little Misery, which makes the north side of the channel opposite to Baker's Island. Misery Ledge has 8 feet least water, and bears from the lighthouses N.W. by W. $\frac{1}{4}$ W., $1\frac{1}{4}$ mile. The south part of Little Misery Island bears N.W. $\frac{1}{2}$ N. from the lights, three-quarters of a mile.

Cat Island is about S.W. by W. from Baker's Island, distant 2 miles, and about a mile from Marblehead Neck, and ranges nearly between the two. On the N.W. end is a high breach, directly opposite the point of Marblehead, named Peach Point. The shore is irregular and rocky. Beyond and in a line with the island are two other heads, of nearly the same projection; and on the southern side are three high *rocks*, two of which are connected with the island by *bars of sand*, uncovered at low water: the other stands boldly up within these two, but more southerly. The Marine Society has erected a spar on Cat Island, 40 feet high, to the top of which is annexed a cask, of about 130 gallons, which is a good sea-mark, being seen at sea 20 to 30 feet above the land. A black spar-buoy lies off the S.E. end, bearing from the lights S.E. $\frac{1}{2}$ S. to S.S.E. $\frac{1}{2}$ E., $2\frac{1}{4}$ miles from the lights.

Marblehead Rock bears S.W., $\frac{3}{4}$ of a mile, from the western part of Cat Island. It is above water, and may be approached to a short distance without danger; on the rock is a monument, or beacon, painted white at the bottom, and black at the top. It is about 8 feet at the base, and 15 feet in height.

Bowditch's Ledge, on the east end of which is a triangular monument of granite, 32 feet high, placed in 2½ fathoms, and bears from Baker's Island Lighthouses W.N.W., 1¼ mile.

Eagle Island is about 1¾ mile from Peach Point, and bears from the lighthouses W. by S. ½ S., 1½ mile. A bar runs off from the western point of the island, in a N.W. direction, half a mile, and has a red spar-buoy on the east end of it. It may be avoided by keeping Gray's Rocks to the southward of Marblehead Fort.

The Common or Ship Channel into Salem is between Baker's Island and Misery Island. It is about one mile wide; and you may, so soon as you are up with Baker's Island, pass within 100 fathoms of it, and steer W. by N. for the Haste, a broken rock above water, which lies near the middle of the channel, with Baker's Island W. by N. 2½ miles, and at one and a quarter mile from Salem Neck. This course will lead clear to the southward of Hardy's Rocks, (a ledge covered at high water,)* and to the northward of the beacon on Bowditch's Ledge. From mid-channel, between Baker's and Misery Islands, steer W.N.W. till you have passed Bowditch's Ledge, or until Cat Island comes open to the westward of Eagle Island; then haul up west for the Haste above-mentioned. You may anchor safely in 5 fathoms; but, to proceed farther, pass the Haste at the distance of about half a mile on the port hand, and steer S.W. by W., which will carry you to the harbour.

Observe, however, that a rocky ledge stretches from the N.E. end of Winter Island, and that a rock, named Abbot's Rock, lies abreast of it, to avoid which, keep a quarter of a mile from shore. This rock has 7 feet over it at low water, and lies with Castle-hill and house into the cove N. of Fort Pickering, and Beverley Meeting-house well in with Juniper Point, the S.E. point of Salem Neck. Be cautious, when keeping off shore, in order to avoid Abbot's Rock, that you do not go so far as to get on the Aqua-vitæ, which are sunken rocks lying E.S.E., nearly half a mile, from Fort Pickering.

Should you, when coming from the south-eastward, find yourself near the Half-way Rock, upon which is a beacon, you may bring it S.E., and steer N.W. for the Haste, passing near to Black Rock. The latter is above water, steep-to, and bears S.W. by S., 1¾ mile, from Baker's Island. It should be left on the port hand, and the Brimbles and Eagle Island on the starboard. The Brimbles are sunken rocks, bare at low water; near them is a spar buoy painted red, which appears out of water at half-ebb. By continuing this course you leave the Haste on the port-hand, and enter the ship channel, whence proceed as above directed. Common tides here rise about 12 feet.

MARBLEHEAD HARBOUR.—Vessels bound to Marblehead, falling to the southward, and running for the lights on Baker's Island, after making them, must keep the north and lower light open to the eastward of the southern light, and run thus for them; this will lead them to the eastward, and clear of the south breakers off Baker's Island, which bear from the lights from S.E. ½ S. to S.S.E. ¼ E., distant 2¼ miles.

Having made these lights, and the wind being westerly, when you get within 2½ miles of them, be careful not to stand to the southward and westward so far as to shut the northern light within the southern one, on account of the south breakers, nor to the northward farther than to bring the lights to bear W.S.W. ½ W., on account of Gale's Ledge, which bears from the lights N.E. by E. distant 1⅓ mile. When approaching the lights, you must take care of a ledge, named the Whale's Back, which bears from the lights N. by E., distant four-fifths of a mile, and dries at quarter-ebb.

In going into Marblehead, and being up with the lights, give the north point of Baker's Island a berth of one quarter of a mile, or less. Having the lights in a line, you will be up with the point. When the south light is open of the north light, you have passed the north point, leaving Misery Island on your starboard hand, which bears from the lights N.W. ⅓ N., about three-quarters of a mile. Your course will then be S.W. by S. or S.S.W., until you bring the south light to bear N.E. by E. ½ E.; steer then S.W. by W. ½ W., about 3 miles, for Marblehead Harbour. You will leave Hardy's Rocks, Eagle Island, and Gray's Rock, on the starboard hand; Pope's Head (a large high rock, bearing S.W. by W. from the lights, two-thirds of a mile), Brim-

* Hardy's Rocks appear at half-tide, and are now distinguished by a beacon. A triangular stone monument, 30 feet high, is also placed on the east end of Bowditch's Ledge in 2½ fathoms with Baker's Island lighthouses bearing E.S.E. distant 1¼ mile.

bles, and the north point of Cat Island, on the port hand. The Brimbles bear from Eagle Island S.S.E. $\frac{1}{2}$ E., distant half a mile; and Gray's Rock from the north point of Cat Island, N.W. by W., seven-eighths of a mile.

Falling in with the south point of Baker's Island, and it blowing hard from the eastward, if you cannot avoid it, you may pass the point by keeping it well on board, say at the distance of from 20 to 50 fathoms from the shore, where you will have from 4 to 5 fathoms water. When up with the S.W. point, steer W.S.W., which will carry you between the North Gooseberry (bearing S.W. $\frac{1}{2}$ S. from the lights, distant two-thirds of a mile,) and Pope's Head, leaving the former on your port hand, and Pope's Head on your starboard hand, between which you will have from $3\frac{1}{2}$ to 5 fathoms water. As soon as you have passed Pope's Head, haul to the northward, until the south light bears N.E. by E. $\frac{1}{2}$ E., then steer S.W. by W. $\frac{1}{2}$ W. for Marblehead Harbour.

On the point of the neck on the south side of the harbour is a fixed light, at 40 feet, visible 14 miles.

The *South Entrance* of Marblehead Harbour is bold, and can be approached with safety with the light on the point of the neck, at the S.E. side of the harbour, bearing from N.N.W. to W. by N., until you are within half a mile of it; then bring the light to bear W. by S., and run for it until within 2 cables' length; then steer N.W. by W. until the lighthouse bears S.S.W.; then steer S.W. and anchor with the light bearing from E. by S. to N.E. by E., from a quarter to half a mile distant, in 6 fathoms, good holding-ground and clear bottom, secure from all but easterly gales.

Vessels coming from the eastward, and running for Half-way Rock, must not bring the rock to bear to the southward of W.S.W., to avoid the South Breaker, which bears from Half-way Rock N.E. $\frac{1}{2}$ E., distant one mile. Being up with Half-way Rock, and bound into Marblehead, bring the rock to bear E. by S. $\frac{1}{2}$ S., and steer W. by N. $\frac{1}{2}$ N. for Fort Head, distant 3 miles, leaving Cat Island on the starboard hand, which bears from Half-way Rock W.N.W., distant $1\frac{3}{4}$ mile, and Marblehead Rock on the port hand, which bears from Half-way Rock W. $\frac{3}{4}$ N., distant 2 miles.

Black Rock bears from Half-way Rock N.W. by W., distant $1\frac{1}{2}$ mile. Cat Island Rock and Point Neck bear East and West of each other, distant about one mile. Vessels being up in Boston Bay, may, by bringing the Boston light to bear S.S.W., run N.N.E., about 10 miles, for Marblehead Rock. Half-way Rock and Boston light bear from each other S.W. and N.E., distant 15 miles.

CAPE COD TO BOSTON.—From about a league off Cape Cod, your course to Boston lighthouse is N.W. by W. $\frac{1}{4}$ W., and the distance about 12 leagues. The lighthouse, which is 60 feet high, stands on an island at the north entrance of the channel, and exhibits a light revolving every $3\frac{1}{2}$ minutes. Near the lighthouse is a fog-bell, which during foggy weather is rung every 45 seconds. When you make the light with a fair wind, bring it to bear W. by N. or W.N.W., then steer for it until you are within two cables' length distance; come no nearer to it, but run in until it bears N. by E.; you may then steer W. by S., about 2 miles, for Nantasket Road, where, if the weather be so bad as to prevent you getting a pilot from the island, you may anchor, and ride in safety.

If the wind be contrary, you may stand to the southward till you bring the light to bear W.N.W., and to the northward till it bears W.S.W., until you come within 3 miles of it; then you must not stand to the northward any farther than to bring the light to bear W. by N., nor to the southward than till it bears W.N.W.; you may safely anchor in the bay, if the wind be off the shore.

From Cape Anne to Boston lighthouse your course is S.W., and the distance nearly 7 leagues. The lighthouses at Cape Anne stand on Thatcher's Island; when they bear S. by W. $\frac{3}{4}$ W. from you, they are on with each other. To go clear without Thatcher's Island Ledge, you must keep about 3 miles distant from the lighthouse. In thick weather, a gun will be fired from the lighthouse, to answer any signal which may then be made.

When you proceed from Cape Cod to Boston Bay, with a flood-tide, you should steer about one point to the northward of the before-mentioned course, because the flood-tide sets into Barnstaple Bay: this precaution is the more necessary when the wind is northerly. You are to be equally careful in steering from Boston Bay to Cape Cod. Until you advance within 2 leagues of Boston lighthouse, you shoalen your water from 35 to 19 fathoms. The soundings are irregular. On the Cape Anne shore the bottom is rocky; but towards Cape Cod is fine sand.

BOSTON.—Boston, the capital of Massachusetts, is pleasantly situated on a small sandy peninsula on the west side of Massachusetts Bay, at the mouth of Charles River, with a safe and commodious harbour, possessing sufficient depth for the largest vessels, and perfectly secure. The buildings have also extended into South Boston on the main land, and to East Boston on a large island in the bay; to the north is Charlestown, also on a peninsula, and Chelsea; and to the west Cambridge and Roxbury. These may be all considered as one large town connected partly by bridges, and partly by regular ferry stations, and containing altogether, in 1845, 114,366 inhabitants. As a commercial town, Boston is second only to New York; the shipping belonging to the port, at the end of 1840, amounted to 220,243 tons; the value of the imports from foreign countries, to £3,200,000; and of exports, to £2,000,000. Several large steamers sail regularly between this and Great Britain. Boston is also distinguished for its schools, and the literary character of many of its citizens. Charlestown contains a United States' dockyard, and *Bunker's Hill*, so celebrated for the battle fought there, 17th June, 1775.

Off the entrance of the harbour is a small shoal, named the Cod Bank, lying E. by S., nearly 3 miles, from the lighthouse, and in the fairway of the harbour, with Point Alderton and the northern sides of Nantasket and Puttock Islands nearly in a line W. $\frac{1}{2}$ S., while the S.W. ends of Outer Brewster and Green Islands are in one bearing N.W. $\frac{1}{4}$ W.

On the south or port side of the entrance are Harding's Rocks, which are steep-to: they lie S.E., $2\frac{1}{4}$ miles, from the lighthouse. At low water the largest rock shows itself above 20 feet long and 4 feet high. It is surrounded by smaller blind rocks, extending about 140 fathoms on all sides. The marks for the largest are the S.W. point of the Lighthouse Island and the westernmost point of Great Brewster Island in one, and Nahant Rock nearly N.E., a small ship's length open with the S.W. end of the Graves. A white buoy is now laid on the N.E. side of the Harding's Rocks, in 4 fathoms, and which, on entering, must be left on the port hand.

Alderton Shoal extends in a northern direction from the bluff head of Point Alderton, on the south side, and about one-third over. A red buoy is placed on the outer part of this shoal, which bears from the white buoy of the Harding's Rocks N.W. by W. $\frac{1}{4}$ W. $1\frac{1}{2}$ mile.

The Egg Rocks are a cluster above water, on the north side, at the distance of half a mile, E. by N., from the lighthouse.

The beacon on the S.W. end of the spit of Great Brewster Island stands at the distance of a mile and a quarter W. $\frac{1}{4}$ S. from the lighthouse; and points out the Narrows, which lie between Lovell's Island on the East, and George's Island, with Gallop and Nick's Mate Islands on the West.

The Centurion, a rock of 14 feet at low water, lies nearly half a mile, S. $\frac{3}{4}$ W., from the beacon; it should be left, in entering the Narrows, on the port or west side. The marks for it are, the S.E. points of Great Brewster and the Outer Brewster Islands in a line, and one-third of Nick's Mate Island shut in with the west of George's Island. From the S.E. side of George's Island a rocky bank extends out more than a quarter of a mile, having at its extremity a black buoy. The entrance to the Narrows lies between this buoy and the beacon point.

On Nick's Mate Island, at the other end of the Narrows, upon the western side, is a beacon or monument, and upon the northern part of Long Island, nearly a mile to the westward of Nick's Mate Island, is a lighthouse, showing a fixed light, 80 feet above the level of the sea, visible 15 miles. This is intended to enable vessels to enter through the passage of Broad Sound during the night.

Marks for a shoal lying in the Lighthouse Channel.—The east point of Gallop's Island, just seen clear of the N.E. end of George's Island; the buoy of the Centurion just clear to the north of the Great Brewster: on this shoal, at low water, there are only 12 to 13 feet. Mr. Wilson, pilot for this harbour, struck upon this shoal in a vessel drawing 14 feet 9 inches, at a period when the tide had flowed about three-quarters of an hour.

Marks for the single rock that lies off the north part of Point Alderton.—The rock on with the first fence that runs over Strawberry Hill; Newcomb's Barn, on Gallop's Island, half-way between the lighthouse on Long Island, and the beacon on the spit. When Newcomb's Barn is on with the beacon, you pass to the north of this rock, on the north side of which a buoy is placed, and near it.

The Handkerchief Shoal, covered at high water, but dry at low water, runs off from

the south point of Deer Island, and is dangerous to vessels passing either in or out of Broad Sound. A black buoy is, therefore, placed near its point, which must be always left to the northward.

SAILING DIRECTIONS.—In sailing directly from the eastward, endeavour to keep the parallel of latitude 42° 20′; this will carry you just to the northward of the Cod Bank. But should you fall to the southward of this parallel, especial care must be taken to avoid the Cohasset Rocks, which lie 5 miles to the south-eastward of Point Alderton. The outer rock, named Minot's Rock, has or had a black buoy upon it, and lies in 5 fathoms water. From this buoy the course to Boston Harbour is N.W., distance 2 leagues. In running on in this direction, you will pass the white buoy of Harding's Rocks; and may thence haul up to the westward, going between the Lighthouse Island and the red buoy on Alderton Shoal.

From the middle of the Lighthouse Channel, steer W. by N., one mile to the beacon on the spit, to which you may approach within a quarter of a cable's length, leaving it on the starboard side, while the Centurion Rock and black buoy on the shoal ground of St. George's Island are left to the port. Having thus entered the Narrows, your course up to Gallop Island Point will be N.W. by N., about three-quarters of a mile. The beacon on Nick's Mate Island may be left on the port hand, at the distance of a cable's length.

From Nick's Mate Island steer W. by N., about 3 miles, for Castle Island, through the main channel; thus you will leave the white spar-buoy of the Lower Middle Ground upon the starboard hand, which buoy is a mile below the Castle Island. It is said that the Lower Middle Ground partly dries at low water, and has on its eastern part a red buoy, and on the western part a black buoy, in 2 fathoms; but these are to be left on the starboard in running up the channel.

When abreast of Castle Island your course will be N.N.W. one quarter of a mile, to clear the Upper Middle Ground, which has a black buoy upon it, lying in 2 fathoms water, to be left on the port side; but should this buoy be taken up, steer N.N.W. until the two northermost steeples in Boston are a handspike's length open; a N.W. by W. course, for 2 miles, will take you up to the town.

To Sail in during the Night, or turn within Lighthouse Anchorage.—Coming from sea in the night, bring the lighthouse to bear West, and steer for it; observing to incline your course southerly as you approach, in order to give a berth of two cables' length to the Lighthouse Island. When you are abreast of the light, shape your course west, until it bears frem N.N.E. to N.E. Here, if not acquainted with the harbour, you may anchor till daylight. With the wind between the S.W. and N.W. quarters, a ship may, in great safety, turn up within the Lighthouse Anchorage, taking care not to stand farther southward than to bring the lighthouse to bear W.S.W., nor farther northward than N.N.W.

On the days of the full and change of the moon, it is high water off Boston Lighthouse at 10 o'clock. It flows off the town till a quarter-past 11 o'clock. The spring-tides rise 16 feet perpendicularly; neap-tides 12 feet.

BROAD SOUND is the northern entrance to Boston Harbour, but is not a proper channel for large vessels. Without its entrance are the Graves, a cluster of rocks appearing white, which you will leave to the port, at the distance of about two cables; then bring them to bear S.E., and run S.W. by W., 4 miles, which will take you to Long Island Light. In the passage between the Graves and Long Island, there are several ledges, particularly the Devil's Back, the Barrel, and Aldridge's Ledge, besides the Ram's Head Bar stretching from the north end of Loveil's Island, and the Fawn Bar, which runs from Deer Island, on the opposite side.

The outer reefs are the Devil's Back and the Barrel: near the latter is a black buoy with a white vane, which is moored about 7 fathoms, N.E., from the rock, in $3\frac{1}{2}$ fathoms, at about 2 miles, W. by S., from the body of the Graves; W.N.W. from the house on Green Island, and with Long Island Head S.W. $\frac{3}{4}$ W., nearly $2\frac{1}{4}$ miles. The Devil's Back has a red buoy upon it lying in 4 fathoms, and is to be left on the port side; the Ram's Head Bar Buoy is black, and lies in 15 feet, to be left on the port hand; and on the N.E. point of the Fawn Bar is a white buoy, to be left on the starboard, which lies in $2\frac{1}{2}$ fathoms, with Long Island Head Light bearing S.W. Aldridge's Ledge lies nearly mid-channel, between the Ram's Head and the N.E. end of Fawn Bar; there is a channel of 3 fathoms on each side. Here you enter the main channel to Boston.

There is also between Deer Bar and Winship Bar, a channel named Shirley Gut but it is so intricate, narrow, and crooked, that it should never be attempted without a

pilot. In the winter the upper buoys in Boston Harbour are commonly taken away.

COHASSET ROCKS.—From Boston Harbour the coast trends to the south-eastward, 5 or 8 miles, to the Cohasset Rocks, which are a very dangerous group of rocks extending several miles from the shore. The rocks also bear the name of Minot's Ledge, or more generally the Minots; and they are the more dangerous as they only appear at one-quarter flood, and the trend of the coast being in a south-easterly direction, vessels bou id in towards Boston, with the wind heavy at N.E., are liable to be driven upon them, should they fall to leeward of Boston Light.

Upon the outer of the Cohasset Rocks a lighthouse formerly stood, but was swept away during the heavy gales of the spring of 1851.* The position of this rock is further to seaward than the others of the group, and at extreme low water an area of only 30 feet in diameter is exposed; the highest part of the rock being at ordinary low water only $3\frac{1}{3}$ feet above the tide level. At high water there are 10 or 12 feet over the rock, and some idea of the difficulties encountered during the construction of the building, will be apparent from the fact, that a landing can only be effected in fine weather after a continuance of westerly winds, and then only for a period of two or three hours. Boats cannot lie alongside the rock at any time when the wind is but light on account of the swell, and a landing is only effected with a good deal of trouble and danger. An easterly wind, however light, raises a sea which renders it impossible to approach the rock, and it was remarked that in heavy easterly gales, the sea broke even to the top of the building. Since the destruction of the lighthouse a spindle has been placed on the rock upon which the building stood.

The soundings immediately round the Cohasset Rocks vary from 5 to 6 fathoms, deepening as you advance from the shore. Within them there is said to be a passage available for boats, and the smaller sized coasting vessels, which is found by giving Scituate Light a berth of half a mile, and running N.W. by N. for the southerly entering rock.

In consequence of the destruction of the lighthouse on the Cohasset Rocks, a light-vessel was immediately moored off their extremity, but whether intended to remain or not, we are unintormed. This vessel bears a single white light, and is moored in 10 fathoms water with Scituate light bearing S. by E., distant 6 miles; Boston outer lighthouse N.W. $\frac{1}{2}$ W., 9 miles; and Glade-house S.W. $\frac{1}{2}$ S., $1\frac{1}{3}$ mile. Vessels on coming from the eastward, after passing Race Point Light. and having made the light-vessel, may run directly for her, and by keeping her close on board can pass her on either hand, but strangers should always pass her on the port hand.

SCITUATE HARBOUR is about half-way between the harbours of Boston and Plymouth. It is a small harbour, having only about 12 feet water on the bar with middling tides. At its entrance, a lighthouse is erected on Cedar Point, which exhibits a red fixed light, visible 12 to 15 miles. Cedar Point makes the north chop of the harbour, the first cliff so named being the south chop; there are four of these cliffs extending towards the north, the southernmost of which is the highest.

From the body of the lighthouse, the northerly part of Cedar Point, and a ledge, named Long Ledge, extend N.N.W. nearly one mile; so that vessels falling in a little more than one mile to the northward of the lights, may bring the lights to bear South; and, by making good their course North, they will clear the outer ledges of Cohasset Rocks. Sailing half a mile east of the body of the lights, you will clear Cedar Point, Long Ledge, and the first Cliff Ledge. Ledges extend from all the four cliffs, but there

* This building was similar in construction to one on the South Bishop Rock, off one of the Scilly Islands, *England*, which was swept away a few months previous to that on the Cohasset Rocks, at the time when they were about putting the last finishing touch to it, by the addition of the lighting apparatus. The building on the Cohasset Rocks was a wrought iron structure, consisting of 9 piles (8 inches diameter at the base, tapering to 6 at the top) one being in the centre, and eight in a circle of 25 feet diameter, falling into a circle of 14 feet at the top. These piles were 55 feet long, each pile being placed 5 feet into the rock, and securely wedged and braced at suitable distances by heavy bars of wrought iron. Upon the top of these pillars a cast iron frame or spider, weighing nearly 5 tons, was secured, upon which was the keeper's house and the lantern.

Many of our readers, after perusing the above description of the Cohasset Rocks, will recollect a very *naive* expression made by one of the workmen at the lighthouse on the Skerryvore Rock, *Scotland*, who, after receiving a fall when getting up the rock, said it was like *climbing up the side of a bottle*, alluding to the steep and slippery sides of the rock.

are none between them; and by keeping at the distance of half a mile from shore, all, but the largest vessels, will go clear of everything.

A S.S.E. course from the point will clear Branches Point, consequently, if the light has a proper berth, there can be no danger, steering in that direction.

At about two miles W. by N. from the light is a meeting-house, and near the N.W. side of the harbour is a farm-house, with two large barns at a little to the northward. To enter the harbour, the mouth of which is nearly one-third of a mile wide, bring the meeting-house or farm-house to bear about W. by N. from the middle of the entrance, and run in, on that direction, for the farm-house, until you have passed the bar, which is a hard bed of stones and gravel, that does not shift; and, after you have got over the bar, and come upon sandy ground, then haul up and anchor near the beach, on the south side of the harbour.

There is a ledge of only 8 feet water, lying off Branches Point, at $1\frac{1}{2}$ mile due West from the shore, from which Gurnet Light bears S. $\frac{1}{4}$ E, distant $4\frac{1}{7}$ miles, and Branches Point distant $1\frac{1}{2}$ mile. Within this ledge, at the distance of three-quarters of a mile, is Philip's Ledge, which is marked by a buoy.

PLYMOUTH HARBOUR is capacious but shallow, and is formed by a long narrow neck of land named Salthouse Beach,* which extends southerly from Marshfield, and terminates at the Gurnet Head, and by a smaller beach within, running in an opposite direction, and connected with the main land near Eel River, about three miles from the town.

This harbour may be known by a round hummock on its northern side, named the Gurnet, upon which two brilliant lights are established; and on its southern side by a double high land, named the Monument. The Monument side is full of shoals and quicksands, which dry in several places; but, on the Gurnet, or north side, there is a fair channel, in which you may ride safely with any wind but an easterly one. But, should an easterly wind happen to blow so hard as to force you from your anchor, you must run farther up the harbour, and anchor within the sandy island, named Brown's Island.

The lighthouses on the Gurnet are of equal height, the lanterns being about 90 feet above the level of the sea: the lights are fixed and brilliant, visible about 5 leagues, and are so situated that they cannot be brought in a line to the northward, unless to those on shore.

From these lights the high land of the Monument bears S. $\frac{1}{4}$ W., 3 miles; Monument Point, S.S.E., 2 leagues; Saquash Head, W. $\frac{1}{2}$ S., 3 miles; the easternmost part of Brown's Island, which dries, S.S.E., $1\frac{1}{3}$ of a mile; and the Gurnet Rock, E. by S. $\frac{3}{4}$ S., one-third of a mile; on this rock are but 3 feet, and it is pointed out by a white buoy. The Gurnet bears from the Race Point of Cape Cod W. $\frac{1}{4}$ S., about 6 leagues.

In proceeding for Plymouth, so soon as you have shut in the sandy hill with the Gurnet Head, you will be clear of the Gurnet Rock; after which you must be cautious of hauling close to the head, as there are many sunken rocks at some distance from shore. When you have brought Saquash Head to bear W. by N., you may steer W. by S., and, if bound to Plymouth, you must keep that course towards a large red cliff on the main, which is a very good mark for leading clear of Dick's Flat, on which is a stone monument: you will then steer more southerly for Beach Point, or run up until you are abreast of Saquash Head, giving it a distance of one-quarter of a mile. Then steer W. by S. $\frac{1}{2}$ S., which will carry you clear of Dick's Flat directly for Beach Point, keeping within 15 or 20 yards of the sandy point as you edge away to the southward, until you have shut in the lights, where you may anchor in 3 or 4 fathoms; but the channel is very narrow, having nothing but a flat all the wall to Plymouth, except this small channel, which runs close to the neck of land, and in which you will have 4 or 5 fathoms close to the sandy point.

If bound into the Cow-Yard, steer as above directed, which will lead clear of Dick's Flat stone beacon, and the Muscle Bank, on which also there is a stone monument; observing to keep the house on the Gurnet Head just open with Saquash Head, until you have opened the high pines with Clerk's Island; then you will be clear of the Muscle Bank, and may steer N.W., until you have 3 fathoms at low water.

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* On Salthouse Beach is one of the huts erected and maintained by the Humane Society o Massachusetts, for the reception and relief of shipwrecked mariners. There is a breach in the inner beach, which exposes the shipping, even at the wharfs, during an easterly gale. A good mark to clear Brown's Island or sand bank is Gurnet Point lights in one.

In turning into Plymouth, you should not stand to the northward into less than 3 fathoms, as it runs flat a long way off from the Gurnet Head to Saquash; and off both heads a point of rocks extends to a considerable distance from shore, many of which are nearly uncovered at low ebbs. There is shoal water also all the way from Saquash to the Muscle Bank; so that you should not stand into less depth than that above mentioned; and, in standing towards the sands to the southward, you should tack in 4 fathoms, as it is steep-to and you may observe the rips unless the water be very smooth. The shoal extends from abreast of the lights to Beach Point, and the greatest part of it is uncovered at low ebbs.

In coming from the southward to Plymouth Harbour, you must not open the northern light to the westward, but keep them in one, bearing N.N.W. $\frac{1}{2}$ W., which will carry you into 5 fathoms, by the easternmost part of Brown's Island, keeping that course till you are within half a mile of the Gurnet Head, or near, where you will have but 4 fathoms. Saquash Head will then bear W. by N. a little northerly, and the two outermost trees on the head be in one; when you may steer directly for them, until you bring the lighthouse to bear E.N.E., and the house on Saquash N.W., just open with the first sandy beach, where you may anchor in Saquash Road, in 4 fathoms, good clear bottom; but, if bound to Plymouth, or the Cow-Yard, you may steer as before directed.

Should you fall in to the southward of Brown's Island, between that and the Monument land, where in some places you will find 20 fathoms, you must not attempt to run for the lights, until you have brought them on with each other, bearing N.N.W. $\frac{1}{2}$ W.; for if you do, you will run on Brown's Island, as there is no passage even for a boat at low water.

In coming in from the northward, for Plymouth, you should not bring the lights more southerly than S. by W., as thus you will avoid the High Pine Ledge, which lies North, $2\frac{1}{2}$ or 3 miles, from the Gurnet Head. The shoalest part of this ledge, which is uncovered at low ebbs, lies about $1\frac{1}{3}$ mile from shore, with the high pines in range with Captain's Hill, which will then bear W. by S. It extends N.N.E. and S.S.W. nearly a mile, and has 4 or 5 fathoms close to it, which deepens gradually as you run to the eastward from it, having 10 to 12 fathoms at the distance of a mile.

By night, with the lights bearing S. by W., proceed to the southward until they bear N.W. or N.W. by W., when you will be clear of the rock, and may steer up W. by S., until you have the lights bearing E.N.E., when it will be prudent to anchor until day-light.

The tides flow in Plymouth until nine o'clock, on full and change.

Should you make the Gurnet Lights in the night, during hard northerly or northwest winds, and cannot get into the harbour of Plymouth, you may run in for that of Cape Cod, the point at the entrance of which bears from the Gurnet Lights E. $\frac{3}{4}$ S., about 10 miles. It is bold-to, and unless it be very dark, you may see the sandy hills before you can get on shore.

BARNSTAPLE.—The entrance of the Port of Barnstaple bears S. by W., 19 miles, from Race Point light, and S.E. $\frac{1}{2}$ S., 7 leagues, from the Plymouth or Gurnet Lights. A fixed harbour-light is established here on Sandy Neck, on the west side of the entrance.

Vessels making for this harbour, when coming from the northward, must not approach nearer to the bar than 5 fathoms, until the lighthouse on Sandy Neck bears S.W. $\frac{1}{2}$ W., for a long bar stretches out from the point full 3 miles in a N.E. direction, on the eastern part of which is a buoy, lying in 2 fathoms water; the light bearing from the buoy N.E. $\frac{1}{2}$ E., distant 3 miles. When you are up to this buoy, you should haul close round, leaving it on the starboard side, and run about two cables' lengths S.S.W., to clear the S.W. part of the bar, then steer S.W. by W. $\frac{1}{2}$ W., for about $1\frac{1}{2}$ mile, or until the light bears S.W. by S., which will be the case when you are up to Yarmouth Flats; then steer direct for the light. Always be careful to make the above courses good, for the flood-tide generally sets strong over these flats, and the ebb runs equally strong to the northward over the bar. Continue on your course for the light, until you get within a cable's length of the beach, and follow the shore round the point. There is safe anchorage inside, abreast of the light, with all winds; and with the light bearing from S.W. to N.E., you will have from 5 to $2\frac{1}{2}$ fathoms. There are from 6 to 7 feet over the bar at low water, and from 2 to 3 fathoms in the channel. Vessels drawing 8 feet water may, at high water, bring the light to bear S.W. $\frac{1}{2}$ W., and run directly for it. High water, full and change, at 11 o'clock.

WELLFLEET.—On Billingsgate Island, at the entrance of Wellfleet Bay, five leagues, S.E. by S., from Race Point Light, there is now a fixed light, at 40 feet above the sea, visible 13 miles.

From the west end of Billingsgate Island a shoal extends full 10 miles, in a W. by S. $\frac{1}{2}$ S. to W. by N. direction from the lighthouse, and in a N.W. to N.N.W. direction, 5 or 6 miles: this shoal is chiefly composed of hard sand. At $1\frac{1}{2}$ or 2 miles distance from the light there are about 8 feet water, the Meeting-house (with a steeple) at Brewster bearing S. by E.; at the distance of 5 miles from the lighthouse are from 10 to 12 feet, the said Meeting-house bearing S.S.E.; and at the distance of 7 miles from the lighthouse are $2\frac{1}{2}$ fathoms, the Meeting-house bearing S.E. by S.: at these depths of water the lighthouse bore from E. by N. to E. by N. $\frac{1}{2}$ N. In crossing this shoal point of flats, you will drop into 4 to 5 fathoms water, at the distance of 40 fathoms from the edge of the shoal, when the lighthouse will bear E.N.E. In coming round the shoal, approach no nearer than $2\frac{1}{2}$ fathoms. As soon as you deepen to 4 fathoms, haul up for the light, and anchor.

Vessels drawing 12 feet and upwards should bring the lighthouse to bear E.N.E. to N.E. by E., and steer in from E. by S. to E.S.E., until they get the lighthouse to bear N. by W., when they will have good anchorage, in 3 to 4 fathoms at low water, soft muddy bottom, and be distant from the lighthouse $1\frac{3}{4}$ to $1\frac{3}{4}$ mile. Brewster Meeting-house on with a windmill that stands near it, will then bear S. by W. $\frac{3}{4}$ W.; and the north Meeting-house, which stands on a hill at Eastham (no other building being near it) will bear E. $\frac{1}{2}$ N.

There is a rock in the passage up to Wellfleet, about 12 feet in length and 8 feet in breadth, which is named the Bay Rock, and there are not more than 1 or 2 feet water over it at low tide, while around it there are 9 or 11 feet. When on this rock, Chipman's Windmill, which is the south mill in Wellfleet, is a little open to the northward of a rock, named Blue Rock, and standing near the shore at Wellfleet, bearing N.N.E. $\frac{1}{4}$ E.: this rock is covered at high water. The east point of the Horse-Shoe bears from the lighthouse on Billingsgate Island E.N.E., distant about one-third of a mile. On the south side of this island sandy flats extend to the distance of half to three-quarters of a mile, having only from 6 to 9 feet water.

The Meeting-house, with a steeple, at Brewster, to the eastward of Barnstaple, is the only one to be seen; and this is a good mark to pass over the long shoal point that extends off from the lighthouse.

On Mayo's Beach, at the head of Wellfleet Bay, there is a small harbour light at 30 feet above the sea, visible about 10 miles.

In the Bay of Cape Cod, there are several small harbours besides Wellfleet and Barnstaple, but they are all barred, and only suitable for the smallest coasters. The names of these are Scusset, Sandwich, Scorton, Eastham, &c., and the entrance to them lies over a sandy flat which extends off the shore about two miles. In Cape Cod Bay there are from 10 to 20 fathoms, the soundings shoaling gradually as you approach the shore; and when within the bay there is moderate shelter from all points except the north, and north-west, the winds from which direction blow right in.

CAPE COD.—Cape Cod is the northern part of the peninsula of Barnstaple. On the hook of the cape is Provincetown, distinguished by its useful harbour, which has a depth of water for any ships.

On the extremity of Cape Cod, named Race Point, is a lighthouse which was first lighted on the 5th of November, 1816. It is 25 above the level of the sea, and 155 feet distant from high-water mark. It is a revolving (or repeating) light, on the same principle as that of Boston, already noticed, and is therefore readily known from the light on the high land, which may now, with propriety, be called the High Light of Cape Cod.

The lighthouse of the Clay Ponds, or Highlands Light, is erected on land elevated 135 feet; which, with the elevation of the lantern, makes the whole height 180 feet above high-water mark. The light is fixed; and as there is generally a haze over the cape, it can seldom be seen at more than 6 leagues off.

If outward-bound from Boston lighthouse, and you would wish to fall in with Cape Cod, the course is E.S.E., 13 leagues; thence three leagues to the lighthouse. When up with the lighthouse, and it bears S.W., 2 leagues, you may then steer S.E.

If inward-bound, and you want to fall in with the back of Cape Cod, bring the light to bear S.W., 2 leagues distant; then steer W.N.W. for Boston lighthouse.

Race Point is very bold, and may be known by its light, and a number of fish houses

on it. From one to three miles to the southward of Race Point is what is named Herring Cove, where you may have good anchorage half a mile from the shore (the wind being from E. to N.N.E.) in 4, or even in 3, fathoms.

Good anchorage may be found in a N.E. gale, by running for Race Point Light, giving it one-third of a mile distance as you pass it, as soon as it bears E.N.E., when you will be safe with the wind from N.N.E. to S.E. by E. Haul up E.S.E., and anchor in from 10 to 4 fathoms.

Vessels coming in from sea, or around Cape Cod, will not make the light on Race Point until it bears S. by W. ½ W., the lantern being covered with copper from N.N.E. to E.S.E., to prevent its being mistaken for Boston light. This lighthouse was erected to guide vessels into Provincetown or Cape Cod Harbour, and to enable those which are caught in Boston Bay, with an easterly gale, to find safe anchorage.

PROVINCETOWN, or CAPE COD HARBOUR, is one of the best harbours on this coast. Vessels bound to this harbour from the northward may run within half a mile of the lighthouse on Race Point; after passing it, and it bears East, steer S.S.E., about 2¼ miles, when the lighthouse on the high land of Cape Cod will bear E. by N.; then run for it 1½ mile, which will bring you in the fairway of the harbour; then haul up N.N.W., westerly, a good mile, when you may anchor in 5 to 7 fathoms, with the lighthouse on Long Point, bearing S.W. by S. Large ships should bring the light on Race Point to bear N. by W., and steer S. by E., to pass Wood End Bar in 10 fathoms. So soon as the light on Long Point bears N.E. by N., steer N.E., until in 8 fathoms water; then anchor, the light on the high lands of Cape Cod bearing from E. ½ N. to E. ½ S.

Upon Long Point, at the entrance of Provincetown Harbour, stands a lighthouse, bearing a fixed light. 35 feet above the level of the sea, visible 13 miles.

In running from Race Point to Wood End, after you pass the black land, or hummocks, you will come up with a low sandy beach, which forms the harbour, extending between 2 and 3 miles to Wood End, which is difficult to be distinguished in the night; it is very bold, and you will have 25 fathoms within half a mile of the shore.

In beating into Provincetown Harbour, you must keep the eastern shore on board, until you get into 5 fathoms; standing no farther to the westward than to bring the light to bear E. by S. as there is a long spit of sand running off from the western shore, where, being very bold, you will have 11 fathoms within a stone's throw of the shore. In case it blows so hard that you cannot beat into the harbour, you will have good anchorage without, in from 10 to 15 fathoms.

If in Boston Bay, and you wish to run for Provincetown Harbour, you must endeavour to fall in with Race Point. If in the night, and you cannot see the land, you must bring the light to bear E. by N., and run for it until you have soundings in 14 or 15 fathoms; then steer N.E. until the light bears E. by S. and run N.W. for the harbour. Or, if it blows hard from the N.E., bring Race Point to bear N.W. by N., and steer S.E. by S., which course will carry you into Wellfleet; in steering this course you will make Harwich right a-head. When you open the bay, you will bring an island on your port hand; when, hauling to the eastward, you may anchor safe from all winds.

At full and change it is high water off Race Point at 11h. 45m. On leaving Cape Cod, if bound for Boston, you must calculate the tide, as the flood sets strongly to the S.W.

The lighthouses of Cape Anne and the high light of Cape Cod bear from each other S.S.E. ½ E. and N.N.W., ½ W. distant 13½ leagues. The variation is about 6° 30′ W.

CAPE COD TO CAPE MALABAR.—The following description of the coast from Cape Cod to Cape Malabar, pointing out the spots on which the Trustees of the Humane Society have erected huts for the relief of such persons as may be unfortunately wrecked on this part, is by a member of the Humane Society of America, and was written in the year 1804. It is right to mention that in all probability some changes have taken place since that time, but we add the description as it is the best we possess of this part of the coast; the huts also may not all be in existence.

"The curvature of the shore, on the west side of Provincetown, and south of Race Point, is called Herring Cove, which is 3 miles in length. There is good anchoring ground here; and vessels may ride safely in 4 or 5 fathoms of water, when the wind is from north-east to south-east.

On Race Point stand about a dozen fishing-huts, containing fire-places and other conveniences. The distance from these huts to Provincetown, which lies on Cape Cod

Harbour, is 3 miles. The passage is over a sandy beach, without grass or any other vegetable growing on it, to the woods, through which is a winding road to the town. It would be difficult, if not impossible, for a stranger to find his way thither in the dark; and the woods are so full of ponds and entangling swamps, that if the road was missed, destruction would probably be the consequence of attempting to penetrate them in the night.

Not far from Race Point commences a ridge, which extends to the head of Stout's Creek. With the face to the east, on the left hand of the ridge, is the sandy shore; on the right is a narrow sandy valley, beyond which is naked sand, reaching to the hills and woods of Provincetown. This ridge is well covered with beach-grass, and appears to owe its existence to that vegetable.

Beach-grass, during the spring and summer, grows about 2½ feet high. If surrounded by naked beach, the storms of autumn and winter heap up the sand on all sides, and cause it to rise nearly to the top of the plant. In the ensuing spring the grass sprouts anew, is again covered with sand in the winter, and thus a hill or ridge continues to ascend as long as there is a sufficient base to support it, or till the circumscribing sand, being also covered with beach-grass, will no longer yield to the force of the winds.

On this ridge, half-way between Race Point and the head of Stout's Creek, the trustees of the Humane Society have erected a hut. It stands a mile from Peaked Hill, a land-mark well known to seamen, and is about 2½ miles from Race Point. Seamen cast away on this part of the coast will find a shelter here; and, in north-east storms, should they strike to the leeward of it, and be unable to turn their faces to the windward, by passing on to Race Point, they will soon come to the fishing-huts before mentioned.

At the head of Stout's Creek the trustees have built a second hut. Stout's Creek is a small branch of East Harbour, in Truro. Many years ago there was a body of salt-marsh on it, and it then deserved the name of a creek. But the marsh was long since destroyed; and the creek now scarcely exists, appearing only like a small depression in the sand, and being entirely dry at half-tide. The creek runs from north-west to south-east, and is nearly parallel with the shore on the ocean, from which it is at no great distance. Nor far from it the hills of Provincetown terminate; and, should not the hut be found, by walking round the head of the creek, with the face to the west, the hills on the right hand, and keeping close to the shore on the harbour, in less than an hour the shipwrecked seaman would come to Provincetown. The Humane Society, several years ago, erected a hut at the head of Stout's Creek, but it was built in an improper manner, having a chimney in it, and was placed on a spot where no beach-grass grew. The strong winds blew the sand from its foundation, and the weight of the chimney brought it to the ground; so that, in January, 1802, it was entirely demolished. This event took place about six weeks before the Brutus was cast away. If it had remained, it is probable that the whole of the unfortunate crew of that ship would have been saved, as they gained the shore a few rods only from the spot where the hut had stood.

The hut now erected stands on a place covered with beach-grass. To prevent any accident from happening to it, or to the other hut near Peaked Hill, the trustees have secured the attention of several gentlemen in the neighbourhood.

From the head of Stout's Creek to the termination of the salt-marsh, which lies on both sides, and at the head of East Harbour River, the distance is about 3½ miles. A narrow beach separated this river from the ocean. It is not so regular a ridge as that before described, as there are on it one or two hills, which the neighbouring inhabitants call islands. It may, without much difficulty, be crossed every where, except over those elevations. By these hills, even during the night, the beach may be distinguished from those hereafter to be mentioned. It lies from N.W. to S.E., and is in most parts covered with beach-grass. The hills have a few shrubs on the declivities next the river. At the end of the marsh the beach subsides a little; and there is an easy passage into a valley, in which are situated two or three dwelling houses. The first on the left hand, or south, is a few rods only from the ocean.

The shore which extends from this valley to Race Point, is, unquestionably, the part of the coast the most exposed to shipwrecks. A north-east storm, the most violent and fatal to seamen, as it is frequently accompanied with snow, blows directly on the land; a strong current sets along the shore; add to which, that ships, during the operation of such a storm, endeavour to work to the northward, that they may get into the bay. Should they be unable to weather Race Point, the wind drives them on

shore, and a shipwreck is inevitable. Accordingly, the strand is everywhere covered with the fragments of vessels. Huts, therefore, placed within a mile of each other, have been thought necessary by many judicious persons.

From the valley above mentioned the land rises, and less than a mile from it the High Land commences. On the first elevated spot (the Clay Ponds) stands the light-house. The shore here turns to the south ; and the High Land extends to the Table Land of Eastham. This High Land approaches the ocean with steep and lofty banks, which it is extremely difficult to climb, especially in a storm. In violent tempests, during very high tides, the sea breaks against the foot of them, rendering it then unsafe to walk on the strand, which lies between them and the ocean. Should the seaman succeed in his attempt to ascend them, he must forbear to penetrate into the country, as houses are generally so remote that they would escape his research during the night; he must pass on to the vallies, by which the banks are intersected. These vallies, which the inhabitants call Hollows, run at right angles with the shore; and in the middle, or lowest part of them, a road leads from the dwelling-houses to the sea.

The first of these valleys is Dyer's Hollow, $1\frac{1}{2}$ mile south of the lighthouse. It is a wide opening, being 200 rods broad, from summit to summit. In it stands a dwelling-house, a quarter of a mile from the beach.

A mile and a half south of Dyer's Hollow is a second valley, called Harding's Hollow. At the entrance of this valley the sand has gathered, so that at present a little climbing is necessary. Passing over several fences, and taking heed not to enter the wood on the right hand, at the distance of three-quarters of a mile a house is to be found. This house stands on the south side of the road; and, not far from it, on the south, is Pamet River, which runs from east to west through a body of salt-marsh.

The third valley, half a mile south of Harding's Hollow, is the Head of Pamet Hollow. It may with ease be distinguished from the other hollows mentioned, as it is a wide opening, and leads immediately over a beach to the salt-marsh at the head of Pamet River. In the midst of the hollow the sand has been raised by a brush fence, carried across it from north to south. This must be passed, and the shipwrecked mariner will soon come to a fence which separates what is called the road from the marsh. If he turns to the left hand, or south, at the distance of a quarter of a mile, he will discover a house. If he turns to the right hand, at the distance of half a mile, he will find the same house which is mentioned in the foregoing paragraph.

The fourth opening, three-quarters of a mile south of the Head of Pamet, is Brush Valley. This hollow is narrow, and climbing is necessary. Entering it, and inclining to the right, three-quarters of a mile, will bring the seamen to the house, which is situated at the Head of Pamet. By proceeding straight forward, and passing over rising ground, another house may be discovered, but with more difficulty.

These three hollows, lying near together, serve to designate each other. Either of them may be used, but the Head of Pamet Hollow is the safest.

South of Brush Valley, at the distance of three miles, there is a fifth opening, named Newcomb's Hollow, east of the head of Herring River, in Wellfleet. This valley is a quarter of a mile wide. On the north side of it, near the shore, stands a fishing-hut.

Between the two last valleys the bank is very high and steep. From the edge of it, west, there is a strip of sand 100 yards in breadth. Then succeeds low brushwood, a quarter of a mile wide; and almost impassable. After which comes a thick perplexing forest, in which not a house is to be discovered. Seamen, therefore, though the distance between these two valleys is great, must not attempt to enter the wood, as, in a snow-storm, they would undoubtedly perish. This place, so formidable in description, will, however, lose somewhat of its terror, when it is observed, that no instance of a shipwreck on this part of the coast is recollected by the *oldest inhabitants* of Wellfleet.

Half a mile south of Newcomb's Hollow is the sixth valley, called Pearce's Hollow. It is a small valley. A house stands at the distance of a little more than a quarter of a mile from the beach, W. by S.

The seventh valley is Cohoon's Hollow, half a mile south of Pearce's Hollow. It is not very wide. West from the entrance, several houses may be found at the distance of a mile. This hollow lies E. by N. from Wellfleet Meeting-house.

Two miles south of Cohoon's Hollow, is Snow's Hollow, the eighth valley. It is smaller than the last. West from the shore, at the distance of a quarter of a mile, is the county road, which goes round the head of Blackfish Creek. Passing through this valley to the fence, which separates the road from the upland and marsh at the

head of the creek, a house will immediately be found, by turning to the right hand, or north. There are houses also on the left, but more remote.

The high land gradually subsides here, and, $1\frac{1}{2}$ mile south, terminates at the ninth valley, called Fresh Brook Hollow, in which a house is to be found, a mile from the shore, west.

The tenth, $2\frac{1}{2}$ miles south from Fresh Brook Hollow, is Plum Valley, about 300 yards wide. West is a house, three-quarters of a mile distant.

Between these two valleys is the Table Land.

After this there is no hollow of importance to Cape Malabar.

From Fresh Brook Hollow to the commencement of Nauset Beach, the bank next the ocean is about 60 feet high. There are houses scattered over the plain open country; but none of them are nearer than a mile to the shore. In a storm of wind and rain, they might be discerned by daylight; but, in a snow-storm, which rages here with excessive fury, it would be almost impossible to discover them, either by night or by day.

Not far from this shore, to the southward, the trustees have erected a third hut, on Nauset Beach. Nauset Beach* begins in latitude 41° 51′, and extends south to latitude 41° 41′. It is divided into two parts, by a breach which the ocean has made through it. This breach is the mouth of Nauset or Stage Harbour; and, from the opening the breach extends North, $2\frac{1}{4}$ miles, till it joins the main land. It is about a furlong wide, and forms Nauset Harbour, which is of little value, its entrance being obstructed by a bar. This northern part of the beach may be distinguished from the southern part by its being of a less regular form. Storms have made frequent irruptions through the ridge, on which beach-grass grows. On an elevated part of the beach stands the hut, about $1\frac{1}{2}$ mile north of the mouth of Nauset Harbour. Eastham meeting-house lies from it W.S.W., distant $1\frac{3}{4}$ mile. The meeting-house is without a steeple; but it may distinguished from the dwelling-houses near it by its situation, which is between two small groves of locusts, one on the south and one on the north, that on the south being three times as long as the other. About $1\frac{1}{4}$ mile from the hut, W. by N., appear the top and arms of a windmill.

The southern part of Nauset Beach, most commonly called Chatham Beach, and by a few persons Potanumaqunt Beach, begins at the mouth of Nauset Harbour, and extends 8 or 9 miles south to the mouth of Chatham Harbour. It is about 50 rods wide. A regular well-formed ridge, which, in the most elevated part of it, is 40 feet high, runs the whole length of it; and, with the exception of a few spots, is covered with beach-grass. This beach forms the barrier of Chatham Harbour, which, from Strong Island, north, receives the name of Pleasant Bay. A mile south of the entrance of Nauset Harbour it joins the main land of Orleans, except in very high tides, when the sea flows from the north-eastern arm of Pleasant Bay into the Harbour of Nauset, completely insulating the beach. By those who are acquainted with the shallow, it may be safely forded at any time; but strangers must not venture to pass it when covered with water, as below the channel is 7 feet deep. On this beach, about half way between the entrances of Nauset and Chatham Harbours, the trustees have erected a fourth hut. The spot selected is a narrow part of the beach. On the west, the water adjoining it is called Bass Hole. Salt-marsh is north and south of it next the beach, but is here interrupted. Orleans meeting-house lies from it N.W. The meeting-house is without a steeple, and is not seen; but it is very near a windmill placed on an elevated ground, a conspicuous object to seamen coming on the coast. It may be necessary to add, that there are three windmills in Orleans, forming a semicircle; that the mill referred to is on the right hand, or N.E. point; and that the mill in the middle point of the semi-circle stands on still higher ground. The meeting-house of Chatham is situated from it S.W. This meeting-house is also without a steeple, and is concealed by Great Hill, a noted land-mark. The hill appears with two summits, which are a quarter of a mile apart. The hut lies east from Sampson's Island, in Pleasant Bay.

Lest seamen should miss this hut, by striking to the leeward of it, the trustees have erected another on the same beach. It stands a mile north of the mouth of Chatham Harbour, east of the meeting-house, and opposite to the town.

Another spot on the same beach would be a proper situation for a hut. It is north of the fourth hut, and east of the middle of Pochet Island. The highest part of

* On this beach are now three lighthouses, at 150 feet from each other, bearing fixed lights.

the ridge is near it, south. A break in the ridge, over which the sea appears sometimes to have flowed, divides this high part from the northern portion of the beach.

On the beach of Cape Malabar, or the Sandy Point of Chatham, the trustees have built a sixth hut. This beach stretches from Chatham, 10 miles into the sea, towards Nantucket; and is from a quarter to three-quarters of a mile in breadth. It is continually gaining south; above three miles have been added to it during the past 50 years. On the east side of the beach is a curve in the shore, called Stewart's Bend, where vessels may anchor with safety, in 3 or 4 fathoms of water, when the wind blows from N. to S.W. North of the bend are several bars and shoals. A little below the middle of the beach, on the west side, is Wreck Cove, which is navigable for boats only. The hut stands 200 yards from the ocean, S.E. from the entrance of Wreck Cove, half a mile. Between the mouth of the cove and hut is Stewart's Knoll, an elevated part of the beach. The distance of the hut from the commencement of the beach is 6 miles, and from its termination 4 miles. Great Hill, in Chatham, bears N. by W., distant 6 miles; and the south end of Morris' Island, which is on the west side of the beach, N. by E., distant 4 miles.

Two miles below the sixth hut is a fishing-hut, built of thatch, in the form of a wigwam. It stands on the west side of the beach, a quarter of a mile from the ocean. Annually, in September, it is renewed, and generally remains in tolerable preservation during the winter.

Another spot, a few rods from the sea, 4 miles south from the commencement of the beach, and half a mile north of the head of Wreck Cove, would be a proper situation for a hut. A little south of this spot, in storms and very high tides, the sea breaks over from the ocean into Wreck Cove.

Cape Malabar Beach may be distinguished from the two beaches before described, not only by its greater breadth, but also by its being of a less regular form. It is not so well covered with grass as Chatham Beach. From Stewart's Knoll, south, to the extremity, it is lowest in the middle. In this valley, and in other low places, fresh water may be obtained by digging 2 feet into the sand. The same thing is true of Nauset and Chatham Beaches.

The six huts, the situations of which have thus been pointed out, are all of one size and shape. Each hut stands on piles, is 8 feet long, 8 feet wide, and 7 feet high; a sliding door is on the south, a sliding shutter on the west, and a pole, rising 15 feet above the top of the building, on the east. Within it is supplied either with straw or hay, and is farther accommodated with a bench.

The whole of the coast, from Cape Cod to Cape Malabar, is sandy and free from rocks. Along the shore, at the distance of half a mile, is a bar, which is called the Outer Bar, because there are smaller bars within it, perpetually varying. This outer bar is separated into many parts by guzzles, or small channels. It extends to Chatham; and, as it proceeds southward, gradually approaches the shore, and becomes more shallow. Its general depth at high water is 2 fathoms, and 3 fathoms over the guzzles; and its least distance from the shore is about a furlong. Off the mouth of Chatham Harbour there are bars which reach three-quarters of a mile; and off the entrance of Nauset Harbour the bars extend half a mile. Large heavy ships strike on the outer bar, even at high water, and their fragments only reach the shore. But smaller ships pass over it at full sea; and when they touch at low water, they beat over it, as the tide rises, and soon come to the land. If a vessel is cast away at low water, it ought to be left with as much expedition as possible; because the fury of the waves is then checked, in some measure, by the bar; and because the vessel is generally broken to pieces with the rising flood. But seamen, shipwrecked at full sea, ought to remain on board till near low water, for the vessel does not then break to pieces; and, by attempting to reach the land before the tide ebbs away, they are in great danger of being drowned. On this subject there is one opinion only among judicious mariners. It may be necessary, however, to remind them of a truth, of which we have full conviction, but which, amidst the agitation and terror of a storm, they too frequently forget."

CHATHAM HARBOUR is on the S.E. part of the peninsula of Barnstaple, and is a convenient station for the fishery. It has but 20 feet of water at low tide; and the bar is continually shifting. The vicinity has been remarkable for shipwrecks, but the accesss is now much improved by two lighthouses, erected upon the point, named James's Head, the lanterns of which exhibit one light each, and are about 70 feet

above the level of the sea, bearing fixed lights, visible 5 leagues. It is said that since their erection the beach has somewhat extended.*

At about 10 miles, E. by S., from Chatham Lights there is a rocky ground, named the Crab Ledge, which runs in a N. by E. and S. by W. direction about 15 miles, and has 10 to 15 fathoms on it. It is said to be 5 miles wide, and to have deep water close to its edges. The exact locality and extent of this shoal, as well as the depth of water upon it, have not been correctly ascertained, and a good survey of this part of the coast is much wanted.

On the sandy point of Monomoy, at 3 leagues to the the southward of Chatham lights, there is a fixed light at 25 feet above the sea, visible 12 miles. Monomoy, which is now an island, was a few years since separated from the mainland, by an irruption of the sea through the sand beach.

LIFE-BOATS, &c.—At Cape Cod and the surrounding neighbourhood a number of life-boats have been established, and in conformity with a Resolution passed at a Meeting of the Massachusetts Humane Society, at Boston, on the 13th of April, 1849,—Notices of the locations of the boats and rockets were printed and extensively distributed amongst the shipping. Following is a copy of the Notice which cannot but prove interesting to our readers:

"The undersigned give notice that the old boats of the Society are stationed as follows:—

			Life dresses for the crew.
Edgartown, Martha's Vineyard,	1	boat	5
Nantucket, near Tuckernuck	1	"	5
Chatham, near the Lights	1	"	8*
Nauset Beach, Eastham	1	"	5
Between Highland Light, Cape Cod, and Race Point	3	"	15
Plymouth, north of the town	1	"	5
Scituate, inside the harbour	1	"	5
Cohasset, do. do.	1	"	5
Nantasket Beach and Hull	2	"	8
Lynn, near Swamscut	1	"	5
Marblehead Harbour	1	"	5
Gloucester Harbour	1	"	5
Rockport, formerly Sandy Bay	1	"	5
Annisquam	1	"	5
Plum Island, under the care of, and belonging to the Merrimac Humane Society	1	"	10

There have been located very recently eighteen other boats, named No. 1, twenty-four feet long; No. 2, twenty and twenty-one feet long; No. 3, fifteen and sixteen feet long—which are fitted after the plan of Colonel Stanton, with India Rubber canvass floats, made by the Union Rubber Company—the depot of which is at No. 19, Nassau Street, New York. They are located at

			Life dresses for the crews.
Nahant, No. 1	1	boat	8
Cut River, Marshfield, No. 1	1	"	9
Point Alderton, No. 2	1	"	—
Cohasset, No. 2	1	"	—
Scituate neck, south of Minot's, No. 2	1	"	—
Chatham, near the lights, No. 2	1	"	see above *
Monomoy Point, near the light, No. 2,	1	"	5
Cuttihunk, near the light, No. 2,	1	"	8
Gay Head, near the light, No. 2,	1	"	5
Plymouth, south of the town, No. 2	1	"	—
Deer Island, Boston Harbour, No. 3,	1	"	5
Boston Light, No. 3,	1	"	5
Swampcut Lynn, No. 3,	1	"	—
Ipswich, near the light, No. 3,	1	"	5
Marblehead, Neck, No. 3,	1	"	—
Scituate Harbour, No. 3,	1	"	—
Cuttihunk, near the otber Boat, No. 3,	1	"	—
Duxbury, at Powder Point, No. 3,	1	"	5

* This description of Chatham Harbour must be received with some caution, as the harbour

Rockets for throwing a line to wrecks, so as to establish a communication whereby a boat may be more safely hauled through the surf, are stationed at Boston Light—at Point Alderton—Scituate Neck, south of Minott's Ledge—Ipswich Light, Highland Light, Cape Cod—and at Chatham.

Three other Boats are being built, under an appropriation from the State, for Plum Island—one to be under the care of the Merrimac Humane Society; one at Race Point, Cape Cod, and one at Wellfleet, near to Newcomb's Hollow, for the Massachusetts Humane Society. Life preservers for all the crews are to be furnished from the same appropriation, so as to insure safety, when boarding wrecks, from the exposed beaches.

The undersigned applied to the Secretary of the Treasury to give orders to the Revenue Cutters to protect the property of the Humane Societies, and to afford facilities for inspecting the boats aud houses on the coasts, and to make experiments, &c. In answer the Secretary writes:—

"In so far as the aid of the Revenue vessels, when employed in the duties specially assigned to them by the ninety-ninth section of the Act of March second, 1799, may be useful in promoting the objects of the Society, the department cheerfully assents to your request. Of this the Collectors at Boston and Newport have been informed.

The Committee earnestly recommend those who may be cast on the exposed beaches, not to attempt to leave the ship until low water—as many lives have been sacrificed by too hastily attempting to land on a rising tide.

R. D. Forbes,
David Sears,
Samuel Austin,
Committee Mass. Humane Society."

Boston, April 24, 1849.

CAPE COD TO NEW YORK.

In this section are some of the most important harbours of the United States. Along the coasts are the various Islands of Nantucket, Martha's Vineyard, Block and Long Islands, within which are extensive sounds containing excellent anchorage. The first Island met with after rounding Cape Cod is Nantucket Island, to the eastern shore of which a near approach should not be made on account of the shoals which lie off it at a distance of 20 miles more or less. We may add that a complete survey is now being made of the whole of the coast of this section, and no doubt, when completed, it will tend greatly to the safety of the navigation. A series of observations on the tides and currents have been made in Vineyard Sound, and the survey of the Nantucket Shoals, which had for some time been in progress, has been completed.

NANTUCKET ISLAND is about 15 miles in extent from east to west, and 5 miles broad in its widest part, which is at its south-east extremity, the northern and western parts tapering to points. This island may be known to those making it from the northward by several objects upon it, such as lighthouses and windmills, which, it is said, can be seen at a considerable distance. The north-west side of the island forms a fine road for ships, which from the eastward, and under favourable circumstances, may be readily attained; but a north-west wind causes a heavy swell.

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suffered much by a storm in May, 1851, which formed a new entrance and washed away part of the beach. We extract the following from the *New York Courier* of June 19, 1851:—"The new entrance into Chatham Harbour was sounded last week. In the south channel the shoalest place found had 9 feet of water upon it at low tide, and the water is constantly growing deeper. In the part of the channel where the beach was, the sand is washed entirely away, and there are 16 feet at low water, and muddy bottom. At first, there were two passages through, with a narrow strip of beach between. This strip is now nearly all washed away, and is covered at half-tide. The north channel has less water than the south, but there is sufficient depth at high water for fishermen and vessels not drawing more more than 10 feet. The tide continues to be very rapid, running in the strength of the tide 6 knots. Four men cannot row a boat against it. The old entrance has become so shallow that a boat cannot pass out at low water. By this change Chatham Lights have become useless as a direction for entering the harbour."

On Sandy Point, or Great Point, the north point of Nantucket Island, is a lighthouse, 60 feet high, which shows a fixed light at 70 feet above the sea, visible 20 miles.

There is also a lighthouse on Sancoty Head, the south-east point of the island, which is 70 feet high, and painted with horizontal rings; the lantern is 150 feet above the sea, and shows a revolving light, which is visible at a distance of about 20 miles, according to the state of the atmosphere. This lighthouse exhibits a flashing white light beyond the distance of 7 miles, the flashes occurring at intervals of one minute, and between the flashes there will appear a fixed white light. Within the distance of 7 miles from the lighthouse there appears a flashing red light, the flashes occurring at intervals of one minute, and between the flashes there will appear a fixed red light. From the lighthouse the lightvessel on Pollock Rip bears N. by E., 23 miles, and the lighthouse on the north point of Nantucket, N. by W., 9 miles.

Off the east coast of Nantucket Island there are various shoals, the outermost of which, named the *New South Shoal or Davis's South Shoal*, lies about 20 miles to the south-eastward of Sancoty Light, and is exceedingly dangerous. It has lately been surveyed by Commander Davis, of the United States Coast Survey, who has made the following remarks upon it:—"The New South Shoal has on it only 8 feet in some places, and bears from the centre of the Old South Shoal from S. 3° 28′ W., to S. 16° 42′ E., by compass, being distant 6 2-5 miles. It is 2 3-10 miles in length from east to west, and its greatest breadth from north to south is nine-tenths of a mile.

Between it and the Old South Shoal there are from 4 to 18 fathoms, but to the north and east there are ridges of only 20 to 24 feet to the extent of about three miles from the New Shoals. Commander Davis states that deep water intervenes between these ridges, and that the soundings on the ridges are very irregular.

The tide rips showed that two, and perhaps three lines of shoal water are near each other, in parallel directions. The latitude of the centre of the New Shoals is 40° 57′ 50″ N., long. 69° 51′ 40″ W., and it bears from Sancoty Head, S.S.E., 19⅓ miles.

The tides set regularly round the compass, the main body of the flood running to the eastward and the ebb to the westward, varying north and south of East and West.

But the flood begins to turn to the southward, passing round to the West, and ebb to the northward, passing round to the East, about 1½ hour before the principal set and strength are attained.

Upon the shoals the tides always run across their line of direction, and are much more rapid, which makes an approach on the side to which the tide is setting very dangerous.

The tide is never still; at even slack water its velocity is seldom less than half a mile, and on the second quarter of the flood and ebb it sets at a rate of two knots."

From the New South Shoal a ridge of 5½ to 9 fathoms extends five miles to the N.N.E., and has immediately on its edge from 10 to 12 fathoms, deepening very rapidly to 20 and 25 fathoms. On it the sea breaks in bad weather. From the centre of this ridge, the centre of the New South Shoal bears W. by S., 4 miles, and the middle of the Old South Shoal, N. ¾ W., 6 miles.

No part of Nantucket Island is visible from the New South Shoal; but the revolving light on Sancoty Head is distinctly visible when the weather is clear.

The *Old South Shoal* lies to the northward of the New South Shoal, about 6½ miles, and has soundings between of 11 to 12 fathoms, on an irregular bottom. This shoal lies in latitude 41° 5′, and longitude 69° 51′, and its centre bears S. by E. ¼ E., 12⅓ miles, from Sancoty Head. It is about 2 miles in extent from N.E. by N. to S.W. by S., and is about half a mile broad. The bottom consists of hard white sand, on which the sea breaks in a tremendous manner, so that, at all times, it must be cautiously avoided, particularly as on some parts there are not more than three feet water.

To the westward of the South Shoals it is probable that there are no dangers, at least none have as yet been found. The soundings are regular, and it is said that at 7 leagues to the westward of the shoals there are 25 to 30 fathoms, the bottom consisting of shining black mud.

Pochick Rip.—This is a rip lying immediately off the south-east part of Nantucket Island. It commences at a short distance from Siasconset Village, and runs E.S.E., about one mile, when you will come to a patch of only 6 feet at low water, between which patch and the island there are a few swashes, from 2½ to 3 fathoms, through which vessels may pass. From the patch the rip runs south, 1½ mile, when you come to another swash, half a mile wide, with 7 fathoms. There is a very shoal spot of 6 feet, W.S.W., one-quarter of a mile, from this channel; which shoal spot runs S.W.

by W., one-quarter of a mile, when you fall into a swash 40 rods wide, from which Tom Never's Head bears N.N.W., distant 3 miles. You then come to the east end of the Old Man.

Old Man Shoal.—This shoal runs to the W.S.W., about 4 miles, and has from 9 feet to 3 fathoms upon it. In about the centre of the shoal there is a narrow passage of $3\frac{1}{4}$ to 4 fathoms, through which boats may pass into the anchorage between the shoal and Tom Never's Head. On either side of this shoal are 7 to 8 and 12 fathoms. The east end of this shoal bears S. 15° 45′ E. (*true*) from Sancoty Head, distant 3 miles, and its west end S. 24° 30′ W. (*true*) from Tom Never's Head, distant $4\frac{1}{2}$ miles.

The space between the Old Man and Pochick Rip and the shore contains excellent anchorage; and with the wind at N.W., N.N.E., E.S.E., South, or S.S.W., is considered to be better than any harbour in Vineyard Sound to vessels bound to the northward or eastward, particularly in the winter season, provided your cables and anchors are good. You will have 5 fathoms, coarse sand, with Tom Never's Head bearing E.N.E. $\frac{1}{2}$ N., and the southernmost land W. by N.; from this to the Old Man the soundings will be 5 to 14 fathoms, red sand, which will be about half-way between the two, and from this you will shoalen your water from 13 to 3 fathoms, fine sand, with black specks.

Bass Rip.—This shoal lies about $2\frac{1}{2}$ miles to the eastward of Siasconset Village, and is about $2\frac{1}{2}$ miles long in a N. by E. and S. by W. direction, and has from 8 to 10 feet water upon it, and in some places less. Close-to all round this shoal are 5 to $7\frac{1}{2}$ fathoms. To the southward of this shoal there are various shoal patches, of 8 to 14 feet, scattered about. The north end of Bass Rip bears E. 30′ S. (*true*) from Sancoty Head, distant 3 miles; and its south end S. $30\frac{1}{2}$° E. (*true*) from the same object, distant $4\frac{3}{4}$ miles.

New Shoal.—This is a small patch lying about two miles to the eastward of the Bass Rip, upon which there are only 16 feet water, and $7\frac{1}{2}$ fathoms close-to. From this shoal Sancoty Head bears W.N.W. $\frac{3}{4}$ W., distant $4\frac{1}{2}$ miles, and Sandy Point Light, N.W. $\frac{1}{4}$ N. $10\frac{3}{4}$ miles.

To the northward of the Bass Rip and New Shoal, about 4 miles, there are several patches of 10 to 14 feet water, which are about $3\frac{1}{2}$ miles from the shore, and have $4\frac{1}{2}$ fathoms close-to all round them. From the northernmost of these shoals Sancoty Head bears S.S.W. $\frac{1}{2}$ W., distant $4\frac{1}{2}$ miles, and Sandy Point Light N.W. by W. $\frac{1}{4}$ W., $5\frac{3}{4}$ miles.

Mc Blair's Shoals.—These are a cluster of 9 to 18 feet patches, lying in latitude 41° 24′ N., and longitude 69° 49′ W. They have immediately around them 8 to 9 fathoms, and must be cautiously avoided by all vessels approaching Nantucket Island from the north-eastward. From their centre Sandy Point Light bears N. 86° E. *(true)*, distant $10\frac{1}{4}$ miles, and Sancoty Head N. 43° 30′ E. *(true)*, nearly 10 miles.

These shoals can readily be perceived by the ripples upon them, caused by the tide, excepting during slack water, at which time there is, of course, no ripple; but in daylight they exhibit the usual discolouration of water.

Great Rip.—This a narrow shoal lying about 10 miles to the eastward of Sancoty Head. On the part of this rip whence Sancoty Head bears W.N.W. are only 4 feet water, and with the village of Squam bearing West there are 5, but on other parts there are $2\frac{1}{2}$, 3, and 4 fathoms.

Fishing Rip.—This rip lies in a direction parallel to the Great Rip. It is about $7\frac{1}{2}$ leagues to the eastward of Sancoty Head, and is 14 miles long, with a depth of 5 to 7 fathoms upon it. Between this rip and the Great Rip the ground is uneven, and it is said that soundings of 12, 22, and 15 fathoms may be obtained.

Davis Bank.—This is a shoal, the centre of which lies in latitude 41° 8′ N., and longitude 69° 39′ W. It is about 5 miles in extent, running in a N.N.E. direction. It was discovered in 1848, and has only been partially examined.

Besides these shoals, all of which have been examined with the exception of the three latter, other dangerous patches have been examined by Commander Davis, the officer employed in the survey of this part of the coast, the following notice of which was published on August 16th, 1848:—

"1st. A shoal, two and a half to three miles long, making off from the southern extremity of Great Rip, with which it is connected by a short ridge of $3\frac{1}{4}$ fathoms. This shoal lies in a N. by W. and S. by E. direction, and has only 8 feet on it in several places.

The distance between the east end of the South Shoal and the new determination

is only 6¾ miles. The southern limit of danger on Great Rip is 15 miles from the shore. Vessels passing to the southward of Great Rip, or to the eastward of Old Nantucket South Shoal, should be careful to govern themselves accordingly The centre of the shoal bears from Sancoty Head, S.E. ¾ E., and S. 62° 30′ E. (*true*), 13¾ miles distant.

2nd. A small shoal, having only 8 feet of water on it in one spot, which bears N. ¼ W., and N. 11° W. (*true*), from eastern end of Old South Shoal, 4¼ miles distant.

3rd. A small shoal, with 16 feet on it, a little to the northward and eastward of the preceding, bearing N. by E., and N. 3° 25′ E. (*true*), from Old South Shoal, 5¾ miles distant.

4th. A small shoal, with 13 feet water on it, to the eastward of south end of Bass Rip. The middle of the shoal bears from Sancoty Head S.E. by E., and S. 65° E. (*true*), 6 miles distant.

5th. A very small shoal spot, having only 10 feet of water on it, north of Bass Rip, and one mile distant from the shoal discovered in that vicinity in 1847. This spot bears from Sandy or Great Point Light S.E. ¾ E., and S. 62° E. (*true*), 6 miles distant.

The ground to the northward, and to the northward and eastward of the Old South Shoal, is broken, dangerous, and marked by occasional strong tide-rips.

Coasters taking the outside way are advised to follow down the east side of Bass Rip, and, passing over the tail of it in 4 fathoms, to haul round under the south side of the Old Man, which, being always visible, it is best to keep in sight. Here you will have a good beating channel, of, at least, two miles;—*i.e.*, from half a mile to 2½ miles from the Old Man. Vessels making this course with an ebb (or westerly) tide, will clear the shoals in a few hours. They will also have more room, and be more favoured by the prevailing westerly winds, than in the Sound."

About the coast of Nantucket and the Shoals, the bottom is generally sandy, and the tide very rapid. In moderate weather a vessel had better come to an anchor than be driven about. The course of the tides over the shoals is nearly regular. The N.E. tide makes flood. A south moon makes full sea in the harbonr of Nantucket. A S.S.E. and N.N.W. moon makes high water on the shoals. The tide of flood sets N.E by E., and ebb S.W. by W., from 2 to 3 miles in an hour: the rise and fall is from 5 to 6 feet.

NANTUCKET SOUND.—This Sound lies between Nantucket Island and the main shore, and has a general depth of 6 to 8 fathoms; but the navigation is rendered somewhat intricate by several shoals which are scattered about. On the principal of these shoals there are lightvessels and huoys.

Pollock Rip.—This is the first shoal met with in running for the Sound from the north-eastward. It extends in an E. ½ N. direction 6 miles from the light on Monomoy Point, and has 5 feet water on its shoalest part. It is marked by a lightvessel, bearing a fixed light, which lies at its eastern extremity, and bears from Chatham Lights, South; from the light on Monomoy Point, E. by S. ¾ S.; from Sandy Point Light, N.E. ½ N.; and from Sancoty Head Light, N. by E., 23 miles. The vessel is said to be often driven from its station, and not to be well tended.

It is said that a red buoy, lying in 14 feet, marks the Pollock Rip, from which Chatham Lights bear N. ½ W, distant 11 miles.

The *Snowdrift* is a shoal which surrounds Monomoy Point, and extends to some distance eastward. A white buoy is placed upon it, at the distance of a mile to the S.E. of the point, and bearing from the red buoy on the Pollock Rip nearly W. ½ S., 3½ miles.

The Stone-horse is the shoal next south of Pollock Rip. It is half a league in length from East to West, while the channel between it and the western part of Pollock Rip, named Butler's Hole, is nearly of the same breadth, and has a moderate depth of water in it.

To run through Butler's Hole from the eastward. After passing Chatham Lights get them in range, at which time they will bear North, and be distant 3¼ miles; steer now South, and pass through the slue, or until Monomoy Light bears W.N.W., when you may steer W. by N., and pass the point at a distance of from one to two miles. After passing the point, steer S.W. until past the Handkerchief, when you may steer W. by S. for the lightvessel on the Cross Rip. When sailing on these courses you will not have less than 3½ fathoms.

The Round Shoals.—The Little Round Shoal is about half a league to the S.E. of the

Stone-horse. The least depth on this shoal is 7 feet, and it is distinguished by a white buoy, having a small pole on it. The Great Round Shoal is to the S.S.E. of the Little Round Shoal. The shoalest water on this shoal is 5 feet. It has a black buoy upon it, which bears from the white buoy S.E. by S., $2\frac{1}{3}$ miles.

The channel between the Round Shoals is not safe for vessels drawing more than 10 feet.

The *Handkerchief* is a shoal lying to the westward of Monomoy Island. It has a white buoy on its south-east point, which bears from Monomoy Point S.S.W. $\frac{1}{2}$ W., 2 miles.

The *Point Rip* is a shoal running 3 miles to the E.N.E. from Sandy or Great Point, the north point of Nantucket Island. On it there are 13 to 14 feet, excepting in some places where it becomes dry, or nearly so, at low water, upon which account it must be cautiously avoided. Close to its edges are $3\frac{1}{2}$ to 7 fathoms, and a narrow swashway divides it near the middle.

On the north-east edge of the Point Rip is a buoy lying in 14 feet, with Sancoty Head bearing S $\frac{1}{2}$ E., distant 8 miles, and Sandy or Great Point light S.W. by W. $\frac{1}{2}$ W., distant 2 miles.

The *Cross Rip.*—This is a shoal lying in nearly the middle of Nantucket Sound, at about 12 miles to the W.N.W. of Sandy Point light. On its northern point there is a lightvessel bearing a fixed light at 38 feet above the sea, visible about 10 miles, from which Point Gammon lighthouse bears N.; Chatham lights N.E.; Monomoy Point light N.E. by E.; Nantucket Sandy Point light E.S.E.; Nantucket Beacon light S.S.E.; Cape Poge light W.; centre of Tuckernuck Island S.S.W. $\frac{1}{2}$ W., distant 7 miles. At about 200 fathoms to the southward of the lightvessel there are only 11 feet water.

The *Horse-shoe.*—This is a shoal immediately to the northward of the Cross Rip, which is represented to be about 7 miles long in a N.W. direction, and its northern part to become dry at low water: close to it there are 13 fathoms. On the southern part of this shoal there is a buoy in 16 feet, which bears from Sandy Point light N.W. by W., $4\frac{1}{2}$ leagues, and from Tuckernuck Island N. by E. $\frac{1}{3}$ E., 5 leagues.

Bishop and Clerks.—These rocks lie $2\frac{1}{4}$ miles to the S. by E. of Point Gammon lighthouse, at the entrance of Hyannis Harbour. They consist of a rocky ledge upon which there are but 3 feet water, and immediately around them there are from 18 to 24 feet. Upon the north-west end of this ledge there is a spindle, and a buoy lies on its south-east end in 15 feet. To clear this ledge on the east side bring Bug Light just open to the westward of Point Gammon; and on the west side, New Spire on with the west bluff of Point Gammon.

At the west end of Nantucket Island is Tuckernuck Island which is about 2 miles in extent, and a little to the westward of it are two or three small islets named Gravelly and Muskeget Islands; these islands are situate on an extensive flat, bearing the name of the Tuckernuck Shoals, which surrounds the west end of Nantucket Island, and runs to the north-westward towards Cape Poge, a distance of 8 miles. Between this flat and the east end of Martha's Vineyard is a passage, about 2 miles wide, named the Tuckernuck Passage, in which there is a depth of about 3 fathoms. At the southern entrance of this channel, at a short distance from Martha's Vineyard, there is a dry shoal, the remains of Skiff Islet, which was swept away some years since during a heavy hurricane.

NANTUCKET HARBOUR.—On the northern side of Nantucket Island is the harbour, which is frequented principally by the coasters. On the west side of the harbour is Brant Point, upon which is a lighthouse 24 feet high, showing a fixed light at 40 feet above the sea, visible about 14 miles: there is a small light on the south side of the harbour, and a little to the westward of Brant Point there are two small lights. These lights are of great use in making the harbour from the north-westward.

The entrance of Nantucket Harbour is greatly impeded by shoals, so that only coasters, and those well acquainted, must attempt to run into it; but these, when within, may anchor in from 13 to 14 feet immediately off the town. The channels in are buoyed, and a depth of 7 to 8 feet can be maintained throughout. At the entrance of the western channel there is a buoy-boat, which is distinguished by a mast.

This harbour has lately been surveyed by Commander Davis, of the United States Navy, and from his chart we copy the following directions:—

A vessel that is to be carried over the bars on the camel will, after passing Sandy or Great Point Light, or Tuckernuck Shoal, run for the town on a S.S.W. or S.S.E.

course, and anchor in from 5 to 6 fathoms water, with Brant Light bearing S. by E. or S. $\frac{1}{8}$ E.

A vessel of small draught that can pass the channel, will run for the buoy-boat off Nantucket Cliff, which is distinguishable by its mast, and anchor near it in 3 or 4 fathoms water, the square tower of a church showing through a gap in the cliff.

The *Western* or *best Channel* is marked by buoys in the following order :—

From	Buoy-boat	to Buoy No. 1 or Outer Bar Buoy.
"	Outer Bar Buoy.....	" No. 2 or Inner Bar Buoy.
"	Inner Bar Buoy	" No. 3 or First Flat Buoy.
"	First Flat Buoy.....	" No. 4 or Second Flat Buoy.
"	Second Flat Buoy	" No. 5 or Third Flat Buoy.
"	Third Flat Buoy.....	" No. 6 or Cliff Buoy.
"	Cliff Buoy	" No. 7 or Outer Black Flat Buoy.
"	Outer Black Flat Buoy	" No. 8 or Inner Black Flat Buoy.

From Inner Black Buoy continue on the same course a quarter of a mile, then steer S.E. $\frac{3}{4}$ S. about one-third of a mile, until opening Brant Point enough to haul up S.S.W. $\frac{1}{2}$ W. into the harbour.

Middle Channel.—Find Buoy No. 9, by bringing the two small Bugs in range, and run from that in a S.W. $\frac{3}{4}$ W. course to Buoy No. 10. From Buoy No. 10 steer S. by E. $\frac{1}{2}$ E. to Buoy No. 6 (or Cliff Buoy), and follow in by the Western Channel as before.

Eastern Channel.—Find the Outer Buoy of the Middle Channel as before, when the Old Bug will appear a handspike's length to the westward of Brant Light; steer in, keeping on this range, which leads into the Western Channel at Buoy No. 7 (or Outer Black Flat).

There is a small shoal to the northward of Brant Point, which will be avoided by shutting in Old Bug Light on a house nearly in range to the northward. The best anchorage is near the wharves.

Latitude of South Tower Church is 41° 16′ 53″; longitude 70° 6′ 16″. Variation of the magnetic needle at Nantucket, in July, 1846, 9° 14′ W.

Tides.—Corrected Establishment of Nantucket..... 12h. 18m.

Rise of highest tide above the plane of reference....	4.9	feet.
Height of mean high water above do.	3.2	„
Fall of lowest tide observed below do.	1.8	„
Fall of mean low water of spring tides below do....	0.3	„
Mean rise and fall of spring tides	3.6	„
Mean rise and fall of neap tides	2.5	„
Mean duration of rise	6h.	6m.
Mean duration of fall	6h.	23m.
Mean duration of stand	0h.	14m.

If bound from Chatham to Nantucket Harbour, bring Chatham Lights to bear N. N.W., when by steering S.S.E., $3\frac{1}{2}$ leagues, you will cross the Pollock Rip in 3 and 4 fathoms of water, leaving the buoy on that Rip to the westward. Here, if the weather be clear, you may see the lighthouses on Monomoy and Nantucket Points. Bring the latter to bear S.W. $\frac{1}{2}$ W., and then, with the lead going, steer for it, leaving the white buoy on the Little Round Shoal on the port side. When you have advanced to about three miles from the lighthouse, steer W. $\frac{1}{2}$ S. until you are past the Point Rip, known by its red buoy, when the lighthouse will bear South. Here you will come in sight of the lights which stand on the western side of the harbour, and towards which you will advance by steering S. by W. $\frac{1}{2}$ W.

A vessel from the eastward may approach the lighthouse on the N.E. point of Nantucket, by proceeding on the parallel of 41° 25′ to the southward of the Great Round Shoal (the buoy on which will be left on the starboard side), and hauling round the Point Rip as above directed; due allowance being made on approaching for the set of the tide.

In approaching the light on the north-east point of Nantucket it will be requisite to be careful of the M'Blair's Shoals, which lie on the same parallel of latitude, and are about 10 miles from the light. Some of these shoals are shallow enough to take up a vessel drawing 15 feet water or less. These shoals have been already mentioned.

In proceeding to sea from Nantucket Harbour, the course from the bar towards the N.E. or Sandy Point lighthouse will be nearly N.N.E. With the tide setting westward, run for the lighthouse, and pass the point at the distance of about two miles leaving the Point Rip on the starboard side. Be cautious that a tide setting eastward

does not drive you on the Rip. Keep the town of Nantucket open to the westward of the lighthouse on the Sandy Point, until you are three miles to the N.N.E. of that point, when you will be in fair ship channel for proceeding either eastward or westward. An E. by S. course will thence carry you to sea, to the southward of the Great Round Shoal, the black buoy on which will be passed at the distance of 4 or 5 miles. If with a light wind and a southerly tide, there should be any risk of being set too near the Great Rip, which extends off Sancoty Head, it will be advisable to run E. by N. or E.N.E., having previously doubled the Great Round Shoal, whence eastward there is nothing to fear.*

OLD STAGE HARBOUR.—This harbour is on the north side of Nantucket Sound, immediately to the westward of Monomoy Point. In it there is anchorage in 3 to 5 fathoms good holding-ground, but exposed to all winds coming from the direction of South round by west to North.

If running for Old Stage Harbour, and you are about 100 yards off the west side of Monomoy Point, steer N.N.W., 5 or 6 miles, by which you will avoid the strand off the shore ; then run E.N.E., two miles, when you will reach the anchorage from which Monomoy Point bears S., distance about 6 miles.

To go through the S.S. W. Channel, in which there are 2 fathoms at full tide, bring the lighthouse on Monomoy Point to bear N. by E. ½ E., and run S.S.W., 1½ mile, into Butler's Hole, in 7 fathoms, from whence steer on the same course (S.S.W.) and it will carry you to the westward of the lighthouse on Sandy Point.

HYANNIS HARBOUR.—This harbour also lies on the northern side of Nantucket Sound, and is about 12 miles to the westward of Old Stage Harbour. It is a place much resorted to by the coasters. On Point Gammon, at the entrance of the harbour, is a lighthouse 20 feet high, which shows a fixed light at 60 feet above the sea, visible about 12 miles. There is, also, a breakwater for the protection of the shipping, and immediately behind it is a small (bug) light near the wharf.

Outside the entrance of the harbour there are several dangers which must be cautiously avoided by all frequenting the place. The outermost rocks, named the Bishop and Clerks, have been already mentioned. Within these, and at about a mile, S.E. ¾ S., from Point Gammon is the *Senator Shoal*, upon which are 7 feet, and between this and the point is a rock named the *Gazelle Rock*. By keeping without the depth of 20 feet, you will avoid these dangers; or you may clear it on the west side by bringing the Bug Light just open to the westward of Point Gammon, and on the east side, the breakwater just about in behind Point Gammon.

The *Gangway Rock* is a patch of 10feet situated on the W.S.W. Ledge, at 2⅔ miles, W. by S. ½ S., from Point Gammon Lighthouse ; it is marked by a buoy, and may be cleared to the westward by keeping the Bug Light just a little open of the west end of the breakwater; or to the eastward, the west end of the breakwater on with West Spire, or the east end of the breakwater in one with the Bug Light and New Spire.

The *S. W. Ground* is a flat of 8 to 10 feet which runs off to the southward from the west side of the harbour, and has on it several rocks, a group of which, named the Gallatin, lies N.W. by W. ½ W., 1⅓ mile, from the Gangway buoy, and S. by E. from the western buoy of the S.W Ground. The S.W. Ground is marked by a buoy at its south-east corner. You may clear the eastern edge of this ground by bringing the

* The following regulations relative to the pilotage were in force some years since, and are added as they may still be in use :—

By the act for regulating the compensation to pilots, 1820, it was enacted, that any person who shall faithfully and skilfully pilot any vessel through the Vineyard Sound, over Nantucket Shoals, to her port of destination in Boston Bay, or eastward thereof, shall be entitled to receive the following rates of pilotage :—From the 1st of November until the 31st day of March, inclusive, for a vessel not drawing more than 11 feet of water, 3½ dollars per foot; if drawing over 11 and not more than 14 feet, 4 dollars per foot; if drawing over 14 feet, 4½ dollars per foot. From the 1st day of April until the 31st day of October, inclusive, for a vessel not drawing more than 11 feet, 2½ dollars per foot; if drawing over 11 feet, and not more than 14 feet, 3 dollars per foot; if drawing over 14 feet, 3½ dollars per foot; with an addition of 5 dollars if such person shall be landed at any place to the eastward of Cape Anne, and not eastward of Portsmouth ; or of 10 dollars if landed eastward of Portsmouth.

The provisions of this Act do not extend to any case where an agreement, in writing, shall be made between the master or owner of a vessel, and the person who may undertake to act as pilot of such vessel, fixing any other rate of pilotage for such services ; but nothing in the Act affects any law respecting pilotage previously in force.

West end of the breakwater on with the West Spire, or the east end of the breakwater nearly in one with the Bug Light and New Spire To cross the ground to the westward of the buoy in 10 feet, bring the west end of the breakwater in one with Bug Light: strangers must not attempt to run to the westward of this mark.

The *Middle Ground* is about a mile in extent, and has 18 feet water on it, excepting at its eastern end, where there is a spot of 12 feet, which lies W. by N., 1½ mile, from the spindle on the Bishop and Clerks. The Great Rock, a rock near the breakwater, in one with West Spire, is a mark for this shoal spot.

In the entrance of the harbour is a rock, named the *Great Rock*, which is visible, and between it and Point Gammon is the *Half-tide Rock*, which lies N.W. ¾ W., three-quarters of a mile, from Point Gammon lighthouse, and S.E. ¼ E., a quarter of a mile, from Great Rock. The mark for the Half-tide Rock is Great Rock on with a small windmill of salt-works, to the W.N.W. of the breakwater.

If from the eastward, and you are bound into Hyannis Harbour by the North Channel (the channel between the Bishop and Clerks and the Senator Shoal off Point Gammon), bring Monomoy Lighthouse to bear E.S.E. ½ E., distant 5 miles, and steer W.N.W. ½ W., 5 miles, when the spindle on the Bishop and Clerks will bear W. ½ N., distant seven-eighths of a mile. Steer now N.W. ¾ W. about 3 miles, until the lighthouse on Point Gammon bears E. by N. ⅓ N., and the Bug Light is in one with the west spire of Hyannis; here the east end of the breakwater will be in one with the second small windmill of the salt-works, westward of the Bug Light, and on with the end of the wharf, bearing N. ¾ E. Run in with this latter mark on (N. ¾ E.) about 1½ mile, double close round the east end of the breakwater, run N.N.W., a quarter of a mile, and anchor in 3 fathoms water on a muddy bottom.

If from the southward and eastward, and bound into the North Channel, bring Sandy Point lighthouse (Nantucket) to bear S.S.E. ½ E., and steer N.N.W ⅓ W. for the lighthouse on Point Gammon, until up with the Bishop and Clerks when the course is as above.

If bound into the Middle Channel (the channel between the Bishop and Clerks and the Middle Ground,) bring Point Gammon lighthouse to bear N. by E., and run in on that course until the spindle on the Bishop and Clerks bears N.E. by E., distant 1¼ mile, when you steer N. by W. ¾ W., 2½ miles, until Point Gammon lighthouse bears E. by N. ½ N., distant 1⅓ mile; you now proceed as before.

If bound into the West Channel (the channel between the Middle Ground and the W.S.W. Ledge,) bring Point Gammon lighthouse to bear N.E. by E., distant 4 miles, and run on this course, leaving the Gangway buoy three-fifths of a mile to the northward and westward, until the Bug Light is just open to the westward of the West Spire, and the east end of the breakwater is on with the second windmill westward of the Bug Light, when you may run as before.

If bound in between the W.S.W. Ledge and the S.W. Ground, bring Point Gammon lighthouse to bear E. by N. ¼ N., and run in on that course, until the Bug Light is nearly on with the West Spire, when you must run for the east end of the breakwater as before.

If from Holmes' Hole or from the westward, and you intend to enter Hyannis by the West Channel, bring Nobska Light to bear West, and then steer East, leaving L'Hommedieu Shoal to the southward, and avoid approaching it in less than 7 fathoms water as it is bold-to, and has but 4 feet water upon it. When the buoy on the east end of L'Hommedieu Shoal bears South, and the light on Cape Poge S.S.E., steer E.S.E. until up with the buoy on Succannessett Shoal, leaving it to the northward; then run East, one mile, after which the course will be E.N.E. to Point Gammon lighthouse.

If from Cape Poge to Hyannis, steer N.N.E., 10½ miles, for the north-west corner of the Horse-shoe, and if you get into 10 or 11 fathoms, it is a sure indication that you are to the northward of the shoal. The course for Point Gammon lighthouse is N.E. by E., 10½ miles. In turning to windward do not approach the Horse-shoe nearer than 10 fathoms, nor to the shore into less than 3½ fathoms.

In working up the harbour, when abreast of the S.W. Ground, do not approach nearer than 2½ fathoms to either shore. When to the northward of the Great Rock, the eastern mark is the Bug Light on with West Spire; and when to the northward of the S.W. Ground, the western mark is the west end of the breakwater on with Bug Light.

The latitude of Point Gammon lighthouse is 41° 36′ 32″ N., and the longitude 70° 16′ 20″ W. The variation of the compass, observed in August, 1846, is 9° 22′ W. I

is high water, on the days of full and change, at 12h. 3m., and the rise of tide is about $5\frac{1}{2}$ feet.

Collier's Ledge.—This is a ledge represented to lie $4\frac{1}{2}$ miles, W. $\frac{1}{2}$ S., from the lighthouse on Point Gammon. It is 3 miles from the shore, and partly dries at low water. Close to its edges there are 3 fathoms.

MARTHA'S VINEYARD is the large island to the westward of Nantucket Island, being separated from it by the Tuckanuck Channel. It is about 17 miles long from east to west, and 8 miles broad in its widest part, which is near the middle. The principal harbours are, that named Holmes' Hole, on the north side of the island, where is situated the town of Tidsbury, and Edgartown, or the Old Town, on the north-east side of the island, west of Chappaquiddick Island.

On Gay Head, the western extremity of Martha's Vineyard, there is a lighthouse 38 feet high, which shows a light at 172 feet above the sea, revolving every 4 minutes, which is visible 25 miles off. It is said that this light can be seen twice in each revolution, and that at the distance of 12 miles it is obscured about three-fourths of the time. At 3 miles distance a light can always be seen, although dimly, during each revolution. The cliff on which the lighthouse stands is 134 feet high, and is very conspicuous, as it appears of various colours, namely, red, white, and yellow, owing to the different strata of earths.

On Cape Poge, the north-east extremity of Chappaquiddick Island, there is a lighthouse 30 feet high, which shows a fixed light at 55 feet above the sea, visible 15 miles. There are also lights at Edgartown, and Holmes' Hole, which will be described in their proper places.

Off the south-west end of Martha's Vineyard there is a small round island, named No-man's Land, which is about 3 miles in extent, and separated from Martha's Vineyard, by a navigable channel $2\frac{1}{2}$ miles wide, in which are 7 fathoms water. If you run through this channel you must be careful of a ledge of rocks, named the Old Man, which lies two-thirds of the distance over from Martha's Vineyard; but there is a passage on either side of this, and you must keep the lead going. It is safer to go outside of No-man's Land, if you are unacquainted with the channel.

The bearing and distance from the southern of the Nantucket Shoals to No-man's Land are about N.W. by W. $\frac{1}{4}$ W., 47 miles. If bound into Vineyard Sound with an easterly wind, run between the north shore and the Old Man, in $3\frac{1}{2}$ fathoms, continue a N.N.W. course until you arrive at Gay Head Light. With an ebb-tide anchor in 5 fathoms, the light bearing N. to N.E.

VINEYARD SOUND.—This is the sound lying between Martha's Vineyard and the Elizabeth Islands, which form the natural division between Vineyard Sound and Buzzard's Bay. These islands are six in number, of which Nashawn, Pasqui, Nashawina, Pemquese and Cutehunk are the principal. Vineyard Sound has lately been surveyed, but the survey has not yet been published.

On the southernmost of the Elizabeth Islands, named Cutehunk, there is a lighthouse, 25 feet high, which shows a fixed light at 48 feet above the sea, visible 15 miles. And, at the distance of about two miles from the lighthouse, there is a dangernus group of rocks named the Sow and Pigs, which are marked by a lightvessel bearing two fixed lights; this lightvessel lies with Cutehunk Light bearing N.E. by E., distant 3 miles; Sow and Pigs Ledge N.E. by E. $\frac{1}{2}$ E., $1\frac{1}{4}$ mile; Gay Head Light S.E. by E. $\frac{1}{2}$ E., 10 miles; and Old Cock (Hen and Chicken) N.N.W., 7 miles.

At Tarpaulin Cove, in Nashawn Island, there is a lighthouse 25 feet high, which shows a fixed light at 80 feet above the sea, visible 17 miles; this light stands on the west side of the cove. There is also a lighthouse standing on Nobska Point (the point separating Vineyard Sound from Buzzard's Bay), which is a great advantage to the navigation of Vineyard Sound, when approaching it either from the eastward or westward; it stands near the eastern extremity of the passage named Wood's Hole, and its proper line of direction, for vessels entering, along the Elizabeth Isles, is N.E. by E. $\frac{1}{2}$ E. Having advanced to the east end of the Middle Ground, by keeping Nnbska Light open of the east chop of Holmes' Hole, vessels will clear the shoals named the Old Town, Flats, &c., and may thence proceed as hereafter directed.

HOLMES' HOLE.—This is a harbour lying on the north side of Martha's Vineyard, and is very useful to those frequenting Vineyard Sound, as it is a place of shelter easy of access. It is well protected from all points except the north, to which direction it is quite open. The soundings shoal gradually as you run up the harbour, and you may anchor in 18 feet at about a mile from the town. On the west chop of

the harbour there is a lighthouse 32 feet feet high, which shows a fixed light at 60 feet above the sea, visible 16 miles. On the east chop of the harbour there is a telegraph.

When entering Holmes' Hole from the westward bring the east chop well open with the west chop lighthouse, and it will lead you clear of the Middle Ground. Give the west chop a berth of half a mile, until you are past the buoy marking the rocks off that chop. You can beat in with perfect safety, the shores being bold and clear. You can anchor in 3½ fathoms, mud, with the west chop light just open with the woods on low point. Small vessels may anchor farther in, and immediately off the town.

The latitude of the lighthouse is 41° 28′ 50″ N., and longitude 70° 36′ 12″ W. The variation of the compass observed in August, 1846, was 80° 50′ W. It is high water on the days of full and change at 11h. 48m.; and the rise of tide is about 3 feet.

The following directions have been given for proceeding to Holmes' Hole from the eastward, but there is some difficulty in reconciling them with charts, the results of the new surveys:—"Haul round the Point Rip of Nantucket, according to the previous instructions, when you may bring the lighthouse to bear E.S.E. ½ E., and then steer W. N.W. ½ W., taking care to make your course good for Holmes' Hole Light, a distance of 8 leagues. Upon this course you will leave, on your port side, the lightvessel near Tuckernuck Shoal, and the lighthouse on Cape Poge, which must previously be brought to bear W. ¾ S., in order to clear the Cross Rip, on the N.E. part of which is a white buoy, in 15 feet water, from which Cape Poge Light bears W. by N., 2½ leagues; Tuckernuck Island S. ½ E., nearly 2 leagues S.; and a red buoy on a shoal, named Squash Meadow Shoal, W.N.W. ½ W., 10 miles.

Squash Meadow Shoal lies about 3½ miles W.N.W. from Cape Poge, and to the southward of a straight line between Cape Poge and the east chop of Holmes' Hole. The lighthouse on Nobska Point, which stands to the westward of Falmouth, kept open of the east chop, and bearing N.W. by W. ¼ W. leads clear of it.

To sail through the North Channel, steer from Chatham Lights S.S.E., about 3½ leagues, until you pass the Pollock Rip in 3 or 4 fathoms, then steer W. ½ S. for Butler's Hole, which has 15 fathoms of water. Here you will see a white buoy to the north, lying on the Snowdrift Shoal, which marks the S.S.W. passage. Next steer W.S.W. for the south part of the Handkerchief, having on its eastern part a white buoy; then steer West, about 11 miles, for the Horse-Shoe, on which is a black buoy; leaving it on the starboard hand, continue this course for 4 leagues, and it will lead to the lighthouse on the west chop of Holmes' Hole.

In proceeding towards Holmes' Hole, in the channel between the Horse-shoe and the bank to the west, named the Hedge-fence, you may find to the northward of the Horse-shoe 10 fathoms of water, at one mile distant from the spots in the latter which are dry at low water. The distance hence to Holmes' Hole is 3½ leagues, and the courses vary from S.W. by W. to W.N.W. ½ W. Passing a black buoy on the east end of the Hedge-fence upon the starboard side, the latter course, W.N.W ½ W., will lead along that shoal in the direction of Nobska Lighthouse, until the lighthouse on the west chop of Holmes' Hole bears S.W. by W., when you may haul in for the harbour."

If running down Vineyard Sound from Holmes' Hole, and Nobska Light is distant from you about half a mile, steer, with the Elizabeth Isles on board upon a course S.W. by W. ¾ W., observing only the precautions given hereafter to vessels entering from the westward. The distance from Nobska Lighthouse to that of Tarpaulin Cove, on Nashawn, is two leagues; and from the latter to that of Cutehunk, at the western extremity of the Sound, about 3½ leagues.

EDGARTOWN.—This harbour is situated on the north-east side of Martha's Vineyard, at about 2 leagues to the south-eastward of Holmes' Hole, and is considered by some to be the best harbour in the island. It is formed by the eastern part of Martha's Vineyard and by the western shore of Chappaquiddick Island, and is, therefore, to the westward of Cape Poge. On the western side of the harbour a flat runs off about two miles to the N.E. eastward, which has from 3 to 15 feet upon it, and is marked by several buoys and a spindle. The soundings in the harbour average from 5 to 6 fathoms, and shoal gradually up to the town, off which there is anchorage in from 3½ to 4 fathoms.

On the pier, at the entrance of Edgartown Harbour, there is a lighthouse, 26 feet high, bearing a fixed light, at 40 feet above the sea, visible 14 miles.

If approaching Edgartown from the westward, pass to the northward of the outer buoy, and if from the eastward, give Cape Poge a berth of half a mile. In either case

steer to the southward, keeping in not less than 4 fathoms, soft and sticky bottom, until up with the middle buoy, from whence you steer S.S.W. to the lighthouse. Give the buoy off the lighthouse a small berth and enter in mid-channel. If intending to anchor above the first wharf, keep near the wharves to avoid the shoal off the inner point of Chappaquiddick. In the night, after passing the outer buoy, or Cape Poge, make use of the lead and tack when the bottom changes from soft to hard, especially on the western side where the water shoals suddenly from 5 fathoms to 12 feet. After Cape Poge bears E. by S., the course changes from S. by W. to S.S.W., and in sailing up you must observe the above precautions as to making use of the lead.

It is high water at Edgartown, on the days of full and change, at 12h. 17m., and the rise of tide is about 3½ feet.

The following directions have also been given for Edgartown Harbour:—

"If from the westward, and intending to enter Edgartown Harbour from the east end of Squash Meadow Shoal, in 3 fathoms water, you should bring the harbour light to bear South, and Cape Poge Light S.E.; then steer S.E. ¾ S., and you will pass the long flat in 4 fathoms water. When the harbour light bears S.W. by S., steer S.S.W. in 6 and 6½ fathoms, until the harbour light bears West; bear up now for the light, and enter the harbour, passing the buoy and lighthouse a little to the southward. If intending to anchor in the outer harbour, follow the above directions until the harbour light bears W. by S., and Cape Poge Light about N.E. ½ E., when you may anchor in 4½ or 5 fathoms water, good holding-ground. When anchoring, be careful, as the bank on either side is steep-to."

TARPAULIN COVE.—This cove is in Nashawn Island, on the western side of the Vineyard Sound, and although small is yet a good place of shelter, as, if you are well provided with ground-tackle, you may ride out a heavy gale, the ground being excellent. The soundings in the cove are from 15 to 18 feet, deepening immediately outside to 8 and 10 fathoms, and there are some rocks nearly at the head of the cove which must be avoided. Near the lighthouse there is a rock of 7 feet, which is marked by a black buoy. This cove is exposed to all winds between E. and E.S.E. Vessels when at anchor here should moor in 5½ fathoms with Gay Head Light just open with the lighthouse points,

To run into Vineyard Sound.—At the entrance of Vineyard Sound, on the western side, is the dangerous group of rocks, named the Sow and Pigs, some of which are above the water. These rocks lie 3 miles, S.W. by W., from the westernmost of Elizabeth's Isles, and about 5½ miles, N.W. by W., from Gay Head. The first of the flood-tide sets strongly to the northward, over the rocks into Buzzard's Bay, which is foul. Within Gay Head there is a sandy bay, in which there is good anchoring, with south and south-easterly winds. Your course along Elizabeth's Isles is E.N.E. in 15, 12, 8, 15, 16, and 17 fathoms water: give this isle a berth of about three-quarters of a mile.

If from sea, you may run for the light on Gay Head, when it bears from N.N.E. to E.S.E., giving it a berth of about 2 miles, to clear the Devil's Bridge, which bears from the light N.W. by N., 1½ mile. As the distance cannot be exactly ascertained in the night time, you should, at that time, keep the lead going; and if, when the lead bears S.E. by E. or S.E., you fall into 7 or 8 fathoms, haul up to the northward until you deepen to 10 or 12; if then it be flood-tide steer N.E.; but, if ebb, N.E. by E., 3 leagues. E.N.E. will then be the course for Vineyard Sound, and will carry you to the northward of the Middle Ground, until you see the light on the west chop of Holmes' Hole Harbour, toward which you may then run in; observing only to keep one mile from the shore, until the east chop appears a cable's length open; when, with the tide of flood you may steer directly for it; with the ebb, however, keep it one point open; until you have a windmill open about a cable's length on the west side of the harbour. You may now run up in the middle of the river, till you get in a depth of 4 or 3 fathoms, when you anchor in good ground. The usual mark for anchoring in Holmes' Hole is, the west chop bearing from N.N.W. to N.W. by N., but, should you intend to remain here for any time, the best anchorage is well up the harbour, and close to the shore, where vessels moor S.E. and N.W. in 6 and 5 fathoms.

About 2½ miles northward from Holmes' Hole there is a shoal named the Hedge-fence, on the eastern part of which is a black buoy; it extends W.N.W. and E.S.E., 6 miles, and is about a mile broad, and has from 4 to 6 feet on it at low water: between this shoal and Holmes' Hole, there are from 8 to 12 fathoms water. If you make the chop in the night, bearing S.E. you will be clear of the Middle Ground, and may steer

for the east side of it till you get into 4 or 3 fathoms on the flat near the chop, and then steer S.E. by E., taking care not to approach the land nearer than in 3 fathoms: but, if in running S.E. by E. the water should deepen to 6 or 7 fathoms, haul up S. by W. or S.S.W. to 4 or 3 fathoms, as above directed.

If coming into the Sound in the night, with a strong north-westerly wind, haul to to the northward until you have smooth water under the Elizabeth Islands, where you may anchor in from 14 to 10 fathoms. With the wind to the southward, it will be best to run through the South Channel, by the Vineyard side: but observe to approach this island no nearer than to the depth of 7 fathoms, until you are abreast of Lumbert's Cove, in which there is a good anchorage with southerly and easterly winds. This place may be known by a high sand-bank named Necunkey Cliff, on its eastern side; mid-way in the cove is the best anchoring, in from 5 to 3 fathoms, sandy ground. The Middle Ground lies about $1\frac{1}{4}$ mile without the cove, and has 12 feet water over it.

Should you intend to proceed hence for Holmes' Hole, the course from opposite Necunkey Point will be about E. by N., keeping sufficiently near the land to clear the Middle Ground. You may run along by the lead, in from 7 to 4 fathoms until you approach nearly to the west chop, in the depth of 3 fathoms. With this depth you may round the chop in the same manner as when running down from the north side of the Middle Ground. Along the shore, between Necunkey Point and the west chop, there is good anchorage in from 6 to 4 fathoms.

The Middle Ground lies nearly E.N.E. and W.S.W. It is between 2 and 3 leagues in length, and has several swashes in it. The east end, now distinguished by a black buoy, bears N.W. by N., from the light on the west chop of Holmes' Hole, and has only 3 or 4 feet water over it. With the east chop open of the west chop, you will be to the eastward of it. To the N.W. of Necunkey Cliff, there are 3 and 4 fathoms over it; but opposite to Lumbert's Cove only 12 feet; and again, to the westward, 3 and 4 fathoms.

From Gay Head to Tarpaulin Cove, the course and distance are N.E. northerly, 3 leagues; and the course from Tarpaulin Cove to Holmes' Hole, E. $\frac{1}{4}$ N., $2\frac{1}{2}$ leagues distant. In Tarpaulin Cove you may anchor in from 4 to $2\frac{1}{2}$ fathoms, and lie safely with the wind between N.E. by E. and S. It will be best to anchor in 3 fathoms, as in that depth you will be out of the tide, where the ground is good for holding. In steering from Tarpaulin Cove to Holmes' Hole, allowance must be made for the tide; as the ebb will tend to set you to the southward, and the flood to the northward. With the east chop open, you may stand in for the harbour, as before described.

A shoal of 13 feet has lately been discovered at the distance of $2\frac{1}{2}$ miles, S. by E. $\frac{1}{2}$ E., from Tarpaulin Cove.

BUZZARD'S BAY.—In Buzzard's Bay there are several excellent harbours, the principal of which, named New Bedford, Mattapoiset, and Sippican, are places of considerable trade.

NEW BEDFORD.—In the approach to New Bedford there are several dangers to be avoided, which are marked by buoys. The outermost of these, named Wilkes' Ledge, lies S. $\frac{3}{4}$ E., $1\frac{2}{3}$ mile, from the Dumpling Lighthouse, and has 10 feet on it at low water. Near the same building, but separated from it by a narrow channel of $4\frac{1}{2}$ to 6 fathoms water, is a dangerous ledge, named the Sandspit; and a ledge of 8 to 15 feet surrounds the lighthouse, the edge of which is marked by a red buoy. The Great Ledge is a ledge of 8 to 12 feet, having a part awash at low water, which bears E. $\frac{1}{3}$ S., one mile, from the Dumpling Lighthouse; it is marked by two buoys, and has 4 to 6 fathoms close-to all round. Within these are various shoals, but no description can be of use without a reference to the chart; suffice it to say that they generally have 4 to 5 fathoms close-to, and that the most dangerous are marked by buoys.

Lights.—On the outermost of the Dumpling Rocks, which is above water, there is a lighthouse, 26 feet high, which shows a fixed light at 43 feet above the sea, visible 14 miles.

On Clark's Point, the west side of the entrance to New Bedford, there is a lighthouse, 42 feet high, which shows a fixed light at 52 feet above the sea, visible 15 miles.

If running for New Bedford by the Western or round Hill Channel (the channel between the Dumpling Rocks and the Sandspit), bring the extremity of Mishaum Point to bear W. by S., and the White Rock open a ship's length to the eastward of the Dumpling Light, and steer northward for the White Rock, keeping it well open with the light. When the lighthouse bears West, distant one-quarter to one-eighth of a mile, steer N.E. by N., $1\frac{1}{2}$ mile, then N.N.E., until Clark's Point Light bears N.N.W.,

then N. ½ E., and when the light bears S.W., and the buoy on Butler's Flat N.N.E., you may anchor in 3 to 4½ fathoms, muddy bottom.

You may pass Butler's Flat, and anchor above it by keeping Clark's Point Light open a quarter of a point to the westward of Round Hill, and when past the buoy, by steering N.W. by N., one-third to half a mile, you may anchor in 3 to 3½ fathoms, mud. Should the buoy be displaced, keep the light open with Round Hill, until the end of the long wharf at Fairhaven is open to the westward of Fort Point, then steer N.W. by N., and anchor as before directed.

If using this channel in the night-time, pass Mishaum Point with Dumpling and Clark's Points lights in one, and when you are a mile from the Dumpling Lights, steer N.E. until it bears N. by W. ½ W., then steer for it, pass it, leaving it at one-eighth of a mile to the westward, and follow the directions already given.

If running in by the Eastern Channel (the channel between the North Ledges and the ledges off Sconticut Neck), bring the western extremity of a grove of trees which stands upon Fort Point in range with the tall dark spire of Fairhaven, and run in. This range will carry you up to the buoy on Butler's Flat, clear of everything; when past the buoy steer N.W. by N., one-third to half a mile, and anchor as already directed.

The latitude of Fairhaven dark spire is 41° 38′ 6″ N., and long. 70° 54′ 35″ W. The variation of the compass observed during October, 1845, at Fort Point, was 8° 57′ W. It is high water, on the days of full and change, at the Dumpling Lighthouse at 7h. 59m., and the rise of the tide is about 5 feet.

MATTAPOISET.—This is a fine harbour, a few miles farther up the bay than New Bedford. It is easy of access, and has a lighthouse on its east side, at about a mile, S.E., from the village. This lighthouse stands on Ned's Point, is 30 feet high, and shows a fixed light visible 14 miles. The following are the bearings and distances from this light:—

A buoy on Nye's Ledge S. 20′ E., distant 2½ miles; a buoy on the S.E. point of Mattapoiset Ledge S. 10½° E., distant 1⅞ of a mile; a buoy on the Snow Rock S. 10° E., 3¼ miles; a buoy on the N.W. part of Mattapoiset Ledge S. 3½° W., 1½ mile; the Cormorant Rocks S. 4½° W., 3½ miles; Angoloco Point S. 55° E., 1¾ mile, and Wood's Hole S. 22½° E., distant 9 miles.

Before coming up with West Island, bring Bird Island Light to bear N.E. by N., and run for it until the light on Ned's Point bears N.N.W. ½ W., when you may haul up N.W. ½ W.. In running this course, you will pass a white buoy with two black stripes on it, lying on the middle of Nye's Ledge in 2½ fathoms; this ledge is a quarter of a mile across, and has not more than 8 feet on some parts of it. Sailing on in this course, a white buoy with three black stripes will be passed on the port hand, this lies on the S.E. part of Mattapoiset Ledge, in 2½ fathoms. Continuing this course, you will pass two buoys, one on your starboard hand, and the other on your port side; the latter is on the east side of the Sinking Ledge, in 3 fathoms, and the former is on the side of the Snow Rock, in 2½ fathoms. Over the Snow Rock are 8½ feet. Keep mid-way until you pass them, when you may steer N.W. by W. until Ned's Point Light bears East, when you may anchor in 3 fathoms water, good bottom.

Besides these buoys, are two others; one is moored about N.E. from the Snow Rock, in 3 fathoms by the side of Barstow Rock; the other on the extremity of Ned's Point, in 2 fathoms.

SIPPICAN HARBOUR.—This harbour lies to the northward of Mattapoiset, near the head of Buzzard's Bay. On Bird Island, at the eastern side of the harbour, there is a lighthouse, which is 25 feet high, and has a lantern of 7 feet, which, seen at a distance of five leagues, appears to revolve once in 3½ minutes. The time of total darkness is equal to twice that of light. On approaching, the time of total darkness decreases until within two miles of it, when there will be no total darkness; but the greatest strength of light will be as 40 to 1 over that of the least light, in the course of each revolution.

Bird Island is small, and only 5 or 6 feet above the level of the sea. From it the north end of Quick's Hole, between Nashawina and Pasqui bears S.W. by S., 15 miles; that of Wood's Hole South, 9 miles; and the entrance of Monument River, at the head of the bay, N.E by E. ½ E., 6 miles.

DIRECTIONS FOR BUZZARD'S BAY.—It may be mentioned that the soundings across the western entrance of Buzzard's Bay, between the Sow-and-Pigs on one side, and the Hen-and-Chicken on the other, and to some distance within, are very irregular, varying from 5 to 10 and 15 fathoms; the bottom generally hard. A S.E. moon

makes high water in the bay; and the average set of the stream hourly is one mile and a half.

If bound from Gay Head to New Bedford, bring the lighthouse on Gay Head S. ¼ W., and steer N. ½ E. until you come to the passage through the islands, named Quick's Hole, which lies 2 leagues from Gay Head. This passage should be entered as near the middle as possible, or keeping rather to the starboard side, so as to avoid a split or flat which extends from the S.E. point of Nashawina, on the port hand. Proceeding thus you will have from 5 to 6 fathoms, and should haul in, keeping the port side best on board, and following in some degree the bend of the shore. Keep Gay Head Light open about a ship's length by the south-east point of Nashawina, till you are at least one mile north of the Hole, and this will carry you to the eastward of a ledge and rock which lie at that distance from it, with only 5 to 12 feet of water on them, with a good channel to the westward, and 5 fathoms all round. Next steer N. ½ W. till you strike hard bottom in 5 fathoms, on the S.E. corner of the Great Ledge, which is on the western side of the channel; then N.E. by N., about three-quarters of a mile, till in 5½ or 6 fathoms, sticky bottom, when the light on Clark's Point will bear N.N.W., and you will be at the entrance to the Eastern Channel, and may proceed as previously directed.

The channel from the eastward, as above, is considered to be the best; but if circumstances render it more convenient, you may proceed to the northward of the Elizabeth Isles, by first giving the Sow and Pigs, at the south-west end of those isles, a berth of about a mile, and run N.E. by N., with the Dumpling Lighthouse in this direction, till Pune or Penequese Island bears S.E.; then steer N.N.E. till Gay Head Light bears South; and thence N. ¼ W., till you strike hard bottom in 5 fathoms, on the S.E. corner of the Great Ledge, and so on, as before directed. Off the north end of Pune or Penequese, distant one mile, lies a rock, with only 8 feet over it at low water; between this and the ledge named Wilkes' Ledge, having a black buoy, is an open channel, free from danger; and the courses may, therefore, be varied according to circumstances.

Those acquainted with Buzzard's Bay commonly use the Western Channel; giving the Old Cock and Hen-and-Chicken, on the western side of the entrance, a sufficient berth. A league and a half to the north-eastward of these is Mishaum Point; and two miles, N.E. ½ E., from Mishaum Point, is the cluster of rocks, above water, named the Dumpling Rocks, which lie off Round Hill Point, and are now distinguished by the lighthouse already mentioned. The only danger to be avoided is on approaching Mishaum Point, as a rock lies about one mile, S.W. by S., from it, having over it only 6 feet of water: there is also a ledge directly south of the point, at the distance of a mile, on which there are not more than 3 fathoms, with common ebbs.

About mid-way between Mishaum Point and the Dumpling Rock is a small patch of 18 feet, which is marked by a buoy. Close-to all round there are 4 fathoms.

Having passed Mishaum Point, you may steer directly for the Dumpling Lighthouse, off Round Hill, and pass to the eastward of it, at the distance of two cables' length, and thence you proceed to New Bedford, as previously directed.

Rhode Island to Buzzard's Bay.—From Seaconnet Rocks, on the eastern side of the East Passage of Rhode Island, giving them the berth of a mile, the course to the entrance of Buzzard's Bay is E. ½ S. By this course made good, all the danger of the Hen-and-Chicken will be avoided. The soundings, generally, will be 9 to 7 fathoms, mostly hard bottom, till the sea deepens to 16 fathoms, softer ground, when Cutehunk Lighthouse will be upwards of a mile distant, and Clark's Point Light will bear N.N.E. You may now run directly for the light till up with the Dumpling Rocks, to which a sufficient berth must he given. Or you may stand on this course of N.N.E. till in 7 fathoms, soft bottom, which will be between Mishaum Point and the Round Hills, and come to an anchor. Or otherwise steer N.N.E. till Pune or Penequese Isle bears S.E., and then E.N.E. for the Quick's Hole Channel, and proceed thence as before directed.

Should it happen, when you have stood in from Seaconnet Point towards Cutehunk, that the light on the Dumplings, or that on Clark's Point, is not to be seen, but that Gay Head Light is in sight, you may stand on your course E. ½ S. till you shut it in behind the west end of Cutehunk, but must then immediately change your course to N.N.E. If neither light is to be seen, the soundings will be the only guide and must be especially attended to.

BLOCK ISLAND.—This island lies at the entrance of Long Island Sound, and is about 5 miles long from north to south, and 2 miles broad at the southern end, from

whence to the northern extremity of the island it tapers to a point. It is of moderate height, and has a lighthouse upon its northern point, which shows two fixed lights at 58 feet above the sea, visible 15 miles. These two lights cannot be made separately when to the northward, unless when in a position to make Point Judith Light N.E., when they appear like the lights of a steam-boat; they are so near together as to appear as one light until you are within 2 or 3 miles of them.

From the north end of Block Island a shoal runs off about a mile to the northward, which has 7 to 10 feet upon it at low water, and 7 to 10 fathoms close-to all round. To avoid this shoal, you should not approach the lighthouse nearer than a distance of 2 miles, or bring Old Harbour Point open of Clay Head, or Point Judith Lighthouse N.E. This shoal is very dangerous to approach, as the tide sets across it with considerable strength.

At about $2\frac{1}{3}$ miles to the south-westward of Block Island is the South-west Ledge, which is $1\frac{1}{2}$ mile in length, in a N.E. and S.W. direction, and has on its shoalest part 5 fathoms rocky bottom. Upon it in blowing weather the sea breaks heavily from seaward. The marks for it are the east point on the south side of the island just open with the middle point, and Block Island Lighthouse open a ship's length to the westward of Grace's Point.

Directions for approaching Block Island, &c.—In approaching the south shoal of Nantucket, the tide runs swiftly, but regularly, to the N.E. and S.W. Near this shoal to the southward, in 25 or 30 fathoms, there is a fine black and white sand; to the eastward, in the same depth, there is coarse sand, gravel, and shells. Near the shoal the water appears very light coloured, the bottom being of black and white sand, with green shells. Nine or ten leagues to the westward of this shoal, in 30 or 40 fathoms, there is black mud of a shining smooth quality, and here lies the Tuckernuck Channel.

If, when coming from sea, you should fall into Block Island Channel, you will find from 54 to 70 fathoms, soft muddy bottom. It is most likely that you will first gain ground in latitude 40°, and in standing to the northward, may shoalen your water to 30 fathoms; thence, when in sight of Block Island, you will have from 25 to 20 fathoms, sandy bottom.

With Block Island bearing North, 4 or 5 leagues distant, you cannot see any land to the northward or eastward; but on approaching the island, you will see Montauk Point, with its lighthouse, to the westward, making as a long low point.

In sailing to the W.S.W. you will make no remarkable land on Long Island, as its broken land appears at a distance like islands. You will have 20 or 22 fathoms out of sight of land, sandy bottom in some, and clay in other places.

The charts will be the best guide to soundings. To the southward of No-man's Island, there is coarse sand, like gravel stones, in 20 and 25 fathoms, and S.S.W. from it, in 28 or 30 fathoms, coarse red sand. S.S.E. from Block Island, in what is termed Block Island Channel, there are 30 and 40 fathoms, with oazy bottom; but, shoaling the water to 25 or 20 fathoms, you will find coarse sand.

In approaching the south side of Block Island, from the southward, the water shoalens gradually. When the island bears from N.W. to N. by W. the bottom is mud; this is commonly named Block Island Channel. This island appears high and round as you come from the southward; and, if from the S.E. it is like a saddle, low in the middle and high at each end, though highest to the southward. Your course from Block Island to Gay Head is nearly E.N.E., and the distance $11\frac{1}{2}$ leagues.

If from the southward and westward, and bound into Narragansett Bay, bring Montauk Lighthouse to bear N. by W. $\frac{3}{4}$ W., distant $1\frac{1}{4}$ mile, and should you intend passing inside of Block Island, steer N.E. $\frac{1}{4}$ E., 24 miles, until Point Judith Lighthouse bears N. $\frac{3}{4}$ E., distant one mile, when you will have cleared the shoal off the north point of Block Island, at the distance of about three-quarters of a mile, and be in 7 fathoms water, grey sand and gravel. Steer now N.E. $\frac{1}{2}$ N., 7 miles, when Beaver-tail Lighthouse will bear N. $\frac{3}{4}$ E., distant half a mile, and you can run either up the bay or into Newport Harbour. Should you intend ever passing outside of Block Island, from the same position steer E. by N. $\frac{1}{4}$ N., 15 miles, when the south-east point of Block Island will bear N.W. by W., distant one mile, and you will have passed three-quarters of a mile to the southward of the south-west ledge. Steer now N.E. by N. $\frac{3}{4}$ N., $18\frac{1}{2}$ miles, when the Beaver-tail Lighthouse will bear as before.

NEWPORT, OR RHODE ISLAND HARBOUR.—The south end of Conanicut Island, named the Beaver's Tail, forms the western point of this harbour. On this

point is a lighthouse, containing a fixed light at 98 feet above the sea, visible 18 miles.

From the S.E. point of Block Island to this lighthouse, the course and distance are N.N.E. ½ E., 8 leagues; about mid-way between them are 24 fathoms water. If you are on the west side of Block Island, with the body of the island bearing E.N.E., in 10 fathoms water, your course and distance to Point Judith will be N.E. ½ E., about 6 leagues. This point appears like a nag's head, making rather bold.

A lighthouse also stands on Point Judith. It is a stone building, 40 feet high; its lantern is 60 feet above the level of the sea, and shows a light revolving every 2¼ minutes, therefore it cannot be mistaken for that on Conanicut Island. Between Block Island and it there are from 30 to 6 fathoms

The entrance of Newport Harbour is one mile and a half broad. On the western side is the Newtown Rock, a sunken rock about 300 yards S.S.W. from the lighthouse, which is awash, and causes the sea to break upon it with any swell. On the eastern side of the harbour is Brenton's Ledge, extending nearly three-quarters of a mile out to the S.S.W.; and there are other rocks near the shore on the same side. Upon the western side, off the Fort Point, at about 3 miles above the lighthouse, are the Dumplings, a cluster of rocks above water, and from which the town of Newport bears due East.

About a mile and a half within the harbour is Goat Island, with its fort, and having a shoal spit from each end, the extremities of which are buoyed. It lies right before the town, and stretches N.N.E. and S.S.W. Brenton's Point with the South end of this Island form the south passage into Newport. The course up the harbour, in mid-channel, is nearly N.E., 3 miles, leaving the Dumplings on the port side; thence E. and E. by S. to the anchorage before Newport. In going up take care to avoid the rocks near Castle Point, on the eastern side, some of which are above water. The best anchorage within off Newport, is nearer to the Goat Island side than to that of Rhode Island, as the other parts of the harbour are grassy, and therefore apt to choke the anchors. On the north end of Goat Island there is now a fixed light. Since this was established the directions are as follow:—In coming from the eastward, to clear Brenton's Reef, bring the Beaver-tail Light to bear W.N.W. Run for it until Goat Island Light can be seen from the deck. The latter will then bear N.E. ¾ E. Run for this light until it bears East, (or continue your course until it bears E.S.E.) at the same time keeping Beaver-tail Light bearing S.W. by W., in 7 to 9 fathoms, good ground.

In coming from the West, for Newport, after passing Point Judith, with its revolving light, steer N.E. by N., until you draw up with Beaver-tail Light, to which, giving a berth, run for Goat Island Light, and anchor as before directed.

Newport Harbour is well buoyed and beaconed.

PROVIDENCE.—From Newport Harbour the course to Providence lies between the Triangle Rock (marked by a red buoy, which may be passed on either side) and Warwick Neck Light N. ¾ W. After leaving Providence Island, 3 miles, N.E. by N., from Warwick Neck Light, you pass on your port side a spar buoy, which you may go very close to. When Warwick Neck Light bears West, steer N.N.E. for Nayat Point Light, leaving the spar buoy on Providence Point on the starboard hand, and running so far to the eastward as to bring Prudence Island to bear South, by which you leave the Middle Ground, marked by a buoy, on the port hand. Soon after passing Nayat Light, you arrive at a pyramid directly opposite to the village of Patuxent, the base of which is painted black, with a white top; this is erected on a ledge of rocks which can be approached very closely, leaving it on the port side. At a short distance from this is another pyramid, and a stake, which you are to leave on the port hand. The Lovely Rocks lie a quarter of a mile from the last pyramid. They are marked by a spar buoy, and must be passed closely on the starboard hand.

NARRAGANSETT BAY lies between Conanicut Island and the main. Your course in is about North, taking care to avoid the Whale Rock and Jones's Ledge, which may be passed on either side. You may then anchor where you please.

Jones's Ledge is a dangerous shoal lying East, half a mile, from Watson's Pier, and South, half a mile, from Bonnet Point. On it there are 7 feet, with 6 fathoms close-to all round it.

In the passage between Conanicut Island and the main, on Dutch or Duck Island, is a harbour light on the north side of the entrance of Dutch Island Harbour, in which vessels may lie safely in 4 fathoms. Vessels bound into this place should run

within half a mile of the lighthouse, before they haul to the eastward for the harbour, as a shoal lies on the south side.

There is another harbour light (fixed) on Warwick Neck, on the west side of the entrance to Providence River. Warwick Neck forms the eastern side of the entrance to East Greenwich, which is half a league broad. The opposite side is named Long Point; and on the shoal that surrounds it is a spar buoy, which on entering is to be left on the port side.

From the lighthouse on Conanicut Island to that on Gay Head, the course is E.S.E. ½ E., and the distance 9 leagues. In little wind, you must take care that the flood does not carry you into Buzzard's Bay, or on the Sow-and-Pigs.

LONG ISLAND SOUND.—Long Island is by far the largest island on the coast of the United States. It is 120 miles long from the Narrows of New York to Montauk Point, its eastern extremity, and has a breadth of about 20 miles in its widest part. The island is low and level, with the exception of a rocky ridge, 200 or 300 feet high, which traverses it from west to east. Hempstead Hill at the eastern end is the highest of this ridge, being 320 feet above the sea. The south side of the island is low and flat, with several bays formed by low sandy islands, of these the chief are Great West Bay, and Great South Bay, this latter is separated from the sea by the narrow islet named Smith's Island, which, with the small island to the west, forms a channel named Fire Island Inlet. Hempstead and Jamaica Bays are further to the southward, at the entrance of the Bay of New York. The latter is rather extensive, and is covered with numerous low marshy islands.

Along the south side of Long Island is a border of sandy ground extending near the middle part to the distance of three miles from a low and broken shore. The courses along this flat, from Montauk Point towards the entrance of New York Harbour, are W.S.W. ½ W., 22 leagues, and thence W. ½ N., 11 leagues.

The eastern part of the flat is of sand; the middle and western parts of sand and stones. At about 4 leagues from the island are from 15 to 18 fathoms of water; and from that distance to 20 leagues, the water deepens to 80 fathoms: in the latter depth the ground is oazy, and has sand with blue specks in it. At about 4 leagues from the east end of the island is coarse sand, with small stones; and at the same distance without the west end, there are small white sand and gravel, with black specks. From the S.W. end the East Bank of New York Harbour extends 5 miles towards Sandy Hook, on the south side of the same.

It may be observed that the coast from Long Island southward to Cape Florida, presents to the eye of the mariner a low level of sand covered with forests, and extending as far as the eye can reach. It is, however, indented here and there with deep bays and harbours, both capacious and accessible. North and east of Long Island, the coast becomes high, and the shore more bold, and good harbours are more numerous. This circumstance has, no doubt, had its effect in determining the maritime character of that part of the Union.

THE SOUND is bordered on the south by the north side of Long Island, which appears with an uneven surface, with numerous bays, of which the principal are Gardiner's and Smithtown. Numerous islands also line the coast, Gardiner's Island being the principal and most important, containing 2500 acres; this island is noted in the Union for its cheese and butter. Shelter Island, further in, forming the western side of Gardiner's Bay, is more extensive, and contains 8000 acres. Plum Island on the northern side of the bay, is about 3 miles long and 1½ in breadth, and has on its western end a lighthouse.

Fisher's Island, on the northern side of the Sound, is 12 miles long and 1½ wide. Long Island Sound is used principally by steam-boats, and the different traders belonging to the ports of Connecticut and Rhode Island, and the towns on the north side of Long Island. At Montauk Point the entrance of the Sound is 4½ leagues broad.

An alteration has lately taken place in the buoyage of Long Island Sound. Vessels passing up the sound to the westward will pass red buoys with even numbers on the starboard hand, black buoys with uneven numbers on the port hand, and buoys with red and black stripes on either hand. Buoys, in channel ways, are colored with alternate white and black perpendicular stripes.

SOUTH SIDE OF THE SOUND.—Montauk Point, the eastern point of Long Island, is about 80 feet high, and has a lighthouse upon it 80 feet high, showing a fixed light 160 feet above the sea, visible 26 miles. A strand of 6 to 18 feet surrounds

Montauk Point, and extends off the coast, to the north-eastward, about half a mile; close to it there are 9 to 4 fathoms, hard sand and gravel.

Between Montauk Point and Block Island there are 10 to 15 fathoms, and as you approach the island you will meet with the South-west Ledge, of which mention has been previously made. On the N.W. side of this shoal you will suddenly shoalen your water from 13 to 6 fathoms, and before a second cast of the lead is obtained, you will be over its shoalest part into 7, 8, 10, 12, and then into 14 fathoms. With Montauk Light bearing W. $\frac{3}{4}$ S., distant 8 miles, you will be in 7 to 12 fathoms on the western edge of the ledge, from which to the point, you will get 12 to 9, 10, and 7 fathoms. Towards the lighthouse, when it bears from West to S.W. by W., the bottom is strong, consisting of grey sand and gravel; but towards the ledge the bottom is of coarse sand, over which there is a strong tide and rippling. When rounding Montauk Point, you can go within a cable's length of the surf, and have 17 to 20 feet, but to keep further off will of course be more prudent.

At about $2\frac{1}{2}$ miles, S. by E., from Montauk Light is the *Montauk Shoal*, upon which there are 4 and $4\frac{1}{4}$ fathoms hard sand. It is plainly shown by the tide rips, and the sea breaks upon it in heavy gales from seaward. Between this shoal and the point there are from 7 to 10 fathoms.

At $3\frac{1}{4}$ miles, N.W. $\frac{1}{2}$ N, from Montauk Lighthouse, is a small shoal, named the *Shagwong*, which has but 5 feet water on it, and is buoyed. Close to it on all sides there are 4 to 6 fathoms, and between it and Long Island there is a four-fathom passage, through which ships may pass, only taking care to avoid the Washington Shoal, a shoal of 12 to 18 feet, which lies a mile from the shore. The Shagwong Shoal is shown by the tide rip. To pass between it and the Washington Shoal, when bound into Fort Pond Bay, bring Rocky Point open of Culloden Point.

At nearly mid-channel between Montauk Point at Fisher's Island, is the *Middle Ground* or *Cerberus Shoal*, which is highly dangerous, as it consists of pointed rocks, and has but 13 feet upon it. It lies in the middle of the entrance of the channel between Fisher's and Gull Islands, and is usually shown by the tide rips. It is of but small extent, and bears from Montauk Lighthouse, N.N.W. $\frac{1}{2}$ W., $7\frac{3}{4}$ miles; from Gull Island Light, E.S.E. $\frac{1}{8}$ S., 7 miles; and from Watch Hill Light, N.E. $\frac{3}{4}$ N., 9 miles. On the south and west sides of the shoal the water deepens quickly from 5 to 12 fathoms; and on the north side it is steep-to, there being close to its edge 14 to 15 fathoms. Caution is always requisite in approaching this shoal, the more particularly as little, if any warning, is given by the lead.

Fort Pond Bay.—At $5\frac{1}{2}$ miles to the westward of Montauk Point, and on the north side of the island, is Fort Pond Bay, which is a very convenient place, and contains excellent anchorage in from 6 to 8 fathoms, but open to the northward. At the bottom of the bay is a pool of fresh water, named Fort Pond. Between this bay and Montauk Point there is a lake named the Great Pond.

GARDINER'S ISLAND.—This island lies about 10 miles to the westward of Montauk Point, and is of a very irregular shape, for although 6 miles long there is no part more than about $1\frac{1}{2}$ mile wide. The north point of the island, named Gardiner's Point, tapers to a point, and is low. A sandy flat, of 8 to 12 feet, surrounds this island, and runs off the shore about three-quarters of a mile: the space between the island and Long Island is entirely occupied by this sandy flat, so that there is no passage excepting round the north end of the island. On the west side of the island is a shoal, named the Crow, which lies about a mile and a quarter to the south-west part of the island, and is connected thereto by a flat of from 14 to 18 feet; this shoal has but 6 feet water on it, and may be avoided by keeping Great Gull Island and Gardiner's Point in range.

You may anchor off the north-east part of Gardiner's Island, during westerly winds, by bringing the high land of Plum Island N. W., and the south point of Gardiner's Island in sight, bearing from S. by W. to South. Here you will have 12 or 10 fathoms on a bottom of sand and mud.

In Gardiner's Bay, on the west side of Gardiner's Island, there is excellent anchorage in 4 to 8 fathoms, well protected by the island from easterly winds, and by Shelter Island and Plum Island from westerly and northerly winds.

On rounding Montauk Point in the night, when the land or light can be seen, and during a westerly gale, you may anchor when the light bears S.W. by S., in 8 or 9 fathoms, coarse sand. Having brought Montauk Point to the southward of West, when the weather is thick, and you cannot clearly ascertain the distance from the point,

the lead must be your guide. Steer as high as W.N.W. until you have gained 9 fathoms, then haul off into 13; and if you suddenly shoalen from 10 to 6, steer off E. by N. until you gain 11 or 12, and a good lead, kept well going, will prevent your going too near the reefs.

In the day-time, if bound to Gardiner's Bay, and having rounded Montauk Point, steer N. by W., until you clearly discover the points that form Fort Pond Bay, and see the red cliff, on the western point, open of Culloden Point, or the eastern point. You may then steer W. by S., for the bluff point of Gardiner's Island, passing between the Shagwong and Cerberus Reefs.

Having made Gardiner's Island you may round its northern low point, approaching it not nearer than three-quarters of a mile, on account of the 12 to 15 feet shoal which runs off it. New London Lighthouse kept a sail's breadth open to the eastward of Plum Island will carry you up into the middle of the bay, in the deepest water, and out of the tide, where you may anchor at pleasure in from 5 to 8 fathoms.

There is good anchorage on the south-west side of Gardiner's Island, which you will reach by following the above directions.

You may also reach Gardiner's Bay by attending to the following directions:—Being three-quarters of a mile to the eastward of Montauk Point, in 5 to 6 fathoms, steer N. $\frac{3}{4}$ E., $1\frac{1}{2}$ mile, until you get into 7 fathoms gravelly bottom, with Montauk Point bearing S.W. by S. $\frac{1}{4}$ S., distant 2 miles. Steer now N.W. $\frac{1}{2}$ W., $4\frac{1}{2}$ miles, until Montauk Light bears S.E. by S. $\frac{1}{2}$ S., $5\frac{1}{2}$ miles, when you will be in 14 fathoms, grey sand and gravel. Then haul in W. by N. $\frac{1}{2}$ N., until Plum Island Light is in sight, then run for it on this course until Little Gull Island Light bears N.E. Run in with it on that bearing until Plum Island Light bears N.W., then haul in to the S.S.E., and anchor in from $3\frac{1}{2}$ to $4\frac{1}{2}$ fathoms, muddy bottom.

GULL ISLANDS.—There are two small islands lying in the middle of the Sound, to the northward of Gardiner's Island. They are but of small extent, and upon the eastern and smallest island there is a lighthouse 53 feet high showing a fixed light at 63 feet above the sea, visible $12\frac{1}{2}$ miles. The channel between these islands and the western end of Fisher's Island is named the *Race*, and is the channel principally used by all vessels bound to the ports in the Sound, as it is both wider and deeper than the channels to the westward of the Gull Islands. In the Race there are two dangers, named the Valiant and Race Rocks, which require care to avoid.

The Valiant Rock lies to the middle of the Race Channel, and has but 17 feet upon it, with 5 to 13 fathoms close-to all round. It bears from Little Gull Island N.E. by E. $\frac{3}{4}$ E., distant 2 miles, and from New London Lighthouse S. $\frac{1}{4}$ E., $6\frac{1}{2}$ miles. The marks for it are, the South Hammock Islet just open to the northward of North Hill, in Fisher's Island; New London Lighthouse on with the gap in Bolle's Hill, which is to the northward of New London, and Little Gull Lighthouse just open to the southward of Great Gull Island.

The Race Rock lies S.W. $\frac{3}{4}$ S., half a mile, from thew est end of Fisher's Island, and has but 4 feet on it, with 14 to 18 fathoms close-to, and 5 and 7 fathoms between it and the island. It is marked either by buoys or a spindle. The mark to clear it is Mystic Lighthouse open to the northward of North Hill.

To run for the Race Channel from the south-eastward, bring Montauk Lighthouse to bear N. by W. $\frac{3}{4}$ W., distant $1\frac{3}{4}$ mile, when you will be in 8 fathoms, sandy bottom. Steer N. $\frac{3}{4}$ E., $3\frac{1}{4}$ miles, until the lighthouse bears S.W. by S. $\frac{1}{4}$ S., distant 2 miles, when you will be in 7 fathoms gravelly bottom; haul now to the N.W. $\frac{1}{2}$ W., and run 13 miles, which will take you into the Race one mile, E.N.E., from Little Gull Island Lighthouse, leaving the Shagwong Reef one mile to the southward and westward, and Cerberus Shoal one mile to the northward and eastward.

If wishing to pass to the eastward of the Cerberus Shoal, when Montauk Lighthouse bears S.W. by S. $\frac{1}{4}$ S., distant 2 miles, steer N.W. by N. $\frac{1}{4}$ N., $7\frac{1}{4}$ miles, until Montauk Lighthouse bears S. by E. $\frac{3}{4}$ E., 8 miles, and Gull Light W. by N. $\frac{1}{4}$ N., when you will be in 25 fathoms, grey sand and black specks. Steer now W. by N. $\frac{3}{4}$ N., $6\frac{3}{4}$ miles, leaving the Cerberus Shoal $1\frac{1}{4}$ mile to the southward and westward, when you will be in the Race as before, and be to the southward of the Valiant Rock.

If you are off the south end of Block Island, give it a berth of one mile, passing between it and the South-west Ledge in 7 and 8 fathoms, and steer W. by N. $\frac{3}{4}$ N., 22 miles, when you will be at the entrance of the Race as before. In this course you will go to the northward of the Cerberus Shoal.

If from Martha's Vineyard, a course of West, southerly, will take you to the Race

Channel. By steering thus you will pass $1\frac{3}{4}$ mile to the northward of the reef extending from the north point of Block Island, in 22 to 24 fathoms, fine dark grey sand and specks.

If from Narragansett Bay. When Beaver Tail Lighthouse bears N. $\frac{3}{4}$ E., distant half a mile, you will be in $13\frac{1}{2}$ fathoms, rocky bottom, and should steer S.W. $\frac{1}{2}$ S., $6\frac{3}{4}$ miles, until Point Indith Light bears N. $\frac{3}{4}$ E., one mile, when you will be in 7 fathoms, grey sand and gravel. From this position a course of W. $\frac{3}{4}$ S., $28\frac{3}{4}$ miles, will take you into the Race at half a mile to the southward of the Valiant Rock; here you will be E.N.E., one mile, from the Gull Lighthouse.

If instead of running for the Race, you wish to run for Fisher's Island Sound, bring Point Judith to bear N. $\frac{3}{4}$ E. as before, and steer West, $17\frac{1}{2}$ miles, which will take you to the entrance of the Sound between Watch Hill Light and Watch Hill reef, in $4\frac{1}{2}$ fathoms, rocky bottom.

PLUM ISLAND.—This island lies to the south-westward of the Gull Islands, and is about $2\frac{1}{2}$ miles in extent from east to west, and one mile broad in its widest part, which is at its western end. On the west end of the island there is a lighthouse, 30 feet high, which shows a revolving light at 63 feet above the sea, visible 15 miles.

Along the east side of Plum Island there is a sandy flat of 8 to 12 feet water, upon the edge of which there is a rock nearly awash at low water. There are 12 feet inside this rock, and $3\frac{1}{2}$ fathoms close-to outside. To avoid it, go not into less than 5 fathoms when approaching the east side of the island.

In the channel between Plum Island and the Gull Islands there is a depth of from $3\frac{1}{4}$ to 6 fathoms, but as there are several dangers in it, this passage is better avoided. In the middle of the channel there is a black rock named the *Old Silas*, close to the westward of which is a sunken ledge of 5 to 13 feet; and three-quarters of a mile to the S. by W. of the Old Silas is a reef named the *Bedford*, upon which there are 13 feet. To avoid the Bedford Reef keep Oyster Pond Point open of the south end of Plum Island, whilst the house on Plum Island is on with the northernmost of the two trees which appear beyond the house. There are several trees, but they appear, when seen from a distance, to be two only.

On the south-east side of Plum Island is Plum Island Road, on which a vessel may anchor, with Mount Prospect, or the high white sand-hills of Fisher's Island, touching the Gull Lighthouse, and bearing N. 62° E., and the N.E. part of Long Island in one with the S.E. end of Plum Island, bearing West; or the east bluff points of Gardiner's Island in one with the low beach extending from the north side of the island S. 45° E. With these marks you will be in from 7 to 8 fathoms, soft mud, and quite out of the tide, at not more than three-quarters of a mile from the shore of Plum Island, where there is very convenient and good water.

The channel between the west end of Plum Island and Oyster Pond Point, in Long Island, is named Plum Gut. In it there is a good depth of water, so that it is commonly used by vessels bound to the western part of Long Island Sound. In this passage there is a rock, on which some years since the ship Loire struck; but it is so very small, that it is difficult to strike soundings on it; it is nearer to the reef extending from Oyster Pond Point than to Plum Island. There is also another rock, having 24 feet over it, about 400 yards from the rocky or bluff point of Plum Island.

To go through Plum Gut to the westward, give Pine Point, which is steep, a berth of $2\frac{1}{2}$ cables length, and steer so as to bring the north bluff of Plum Island to bear N. by W. $\frac{1}{2}$ W. Keep it on that bearing until you have brought the poplar tree clear of the east end of Mr. Jerome's house, or until you have brought Pine Point to the southward of East; you will then observe a wood, close inland of the high bluff of Long Island, which, when bearing W. $\frac{1}{2}$ S., will be in one with the rocky point, which is the next point to Oyster Pond Point. Steering with the wood and this point in one, will carry you clear of the reef lying off the north bluff.

In running through the Plum Gut to the eastward, keep the point over the middle of the wood before mentioned, until the poplar tree is to the west end of the house; then steer to the southward, giving Pine Point a berth as before. Pine Point bearing E. $\frac{1}{2}$ S will lead clear of the shoals coming to the eastward. The tide runs 4 or 5 knots in the gut. The flood sets about N.N.W., and the ebb S.S.E. It is high water at 9h. 38m. on the days of full and change.

GREENPORT.—This port lies on the western part of Gardiner's Bay, behind Shelter Island. In running for this place, from the entrance of Plum Gut, steer S.W., 3 miles, which will bring you up to Ben's Point on Long Beach. This beach is $3\frac{1}{2}$ miles long,

and covered with low cedar-trees, which you leave on your starboard hand going up to Greenport. You will have, from Plum Gut to Ben's Point, from 4 to 4½ fathoms of water, and then your course is W.S.W., 3½ miles. In running this course you will shoal your water to 3 fathoms, and if you get any less water, haul to the southward, and as soon as you get 3 fathoms, keep your course, and run on keeping the lead going, until from one heave you have from 3 to 7 fathoms water. As soon as you get 7 or 8 fathoms water, your course is W.N.W., one mile, which will carry you to Hay Beach Point, on Shelter Island, which you leave on your port hand; haul close round Hay Beach Point, and your course is W.S.W., 1½ mile, to Greenport; then you may come to anchor in a good harbour.

From Gardiner's Point to Greenport the distance is 12 miles, on a W. by S. course. Sailing on in this course you will shoal your water from 6 fathoms gradually decreasing to 3 fathoms on the Long Beach side; and then follow the above directions to Greenport. Five fathoms water can be carried into Greenport, but large vessels should take a pilot. A pilot can always be had.

From Gardiner's Bay to the westward, along the north shore of Long Island, there are several bays and harbours formed by irregularities in the coast of Long Island, but of these we have no description, with the exception of Huntingdon Bay. The most important of these harbours are Huntingdon, Cold Spring, Oyster Bay, Hempstead, Cow, and Little Neck Bay; these are situated in the western part of the Sound, and are principally resorted to by the coasters.

On the north coast of Long Island are several lights, the first of which, after passing Plum Island, is on Old Field Point. It is a building 30 feet high, which exhibits a fixed light at 67 feet above the sea, visible 15 miles. This light bears S. by W., 10½ miles, from that on Stratford Point, on the north side of the Sound.

Eaton's Neck Lighthouse is 13 miles west from Old Field Point. It is painted black and white, in stripes, from the top to the bottom, and shows a fixed light at 300 feet above high water mark. The building is 50 feet high, and the land on which it stands is 84 feet, so that the light is about 134 feet above the level of the sea.

Sand's Point Lighthouse is near the the head of the Sound, at 8¾ miles, S.W. ½ W., from Greenwich or Captain's Isles Light. It exhibits a fixed light at 40 feet above the level of the sea, visible 15 miles.

Huntingdon Bay lies on the west side of Eaton's Neck Lght, and is said to have a good entrance and excellent ground. On the west side of the bay is Lloyd's Harbour, where there is good anchorage in 2 fathoms, perfectly land-locked. To run in, when the light bears N.E. ½ N., steer S.W. ½ S., until the north point of the harbour (which is a low sandy point) is to the westward of you, when you may steer in, leaving Sandy Point at the distance of 20 yards on your starboard hand. It is necessary when either entering or leaving the harbour, to be careful of the shoal water which is to the eastward of the Sandy Point, and on the west side of Huntingdon Bay.

NORTH SIDE OF THE SOUND.—Point Judith, the western point of Narragansett Bay, has been mentioned. Immediately to the westward of the point is a reef, named Squid's Ledge, which is three-quarters of a mile in length, in a N. by W. direction, and has 13 feet on it at each end, with 17 in the middle. The ledge is 1½ mile, W. by N., from Point Judith Lighthouse, and has 4 to 5 fathoms close-to all round. To clear it on the south side, bring Point Judith Lighthouse to bear E. by N. ¼ N.

FISHER'S ISLAND SOUND.—At the eastern entrance to Fisher's Island Sound is Watch Hill Point, upon which is a lighthouse, 35 feet high, showing a light, revolving every 1¼ minute, at 73 feet above the sea, visible 16 miles. Immediately off the lighthouse is a rock, named the Gangway Rock, which has 2 feet upon it, and 2½ fathoms inside it; it lies 300 yards, S.S.W., from the lighthouse, and is or was buoyed.

A little to the southward of Watch Hill Point, is Watch Hill Reef, having on it 12 feet, and which is marked by a spindle; and there several other reefs between this reef and the eastern end of Fisher's Island, so that this entrance to the Sound must only be approached with the greatest caution, particularly as the tide sets over the reefs with considerable strength.

In Fisher's Island Sound there are a great number of dangers, a correct knowledge of the positions of which can only be obtained by a reference to the chart, the result of the survey made by the officers of the United States Navy, who have for some time been engaged in an examination of this part of the American coast. Upon several of the most dangerous reefs there are spindles or buoys to mark their situation, but there

are many dangers which are not so marked, and of these we now proceed to give a list, as it may be of service to the regular traders of the Sound.*

A *rock*, a quarter of a mile, E. by S., from Latimer's spindle, with 3 feet upon it, and $3\frac{1}{2}$ fathoms between it and the spindle. *Young's Rock*, with but one foot upon it, lies a quarter of a mile, N.N.E., from the point off Winthrop's house, with $4\frac{1}{2}$ fathoms between it and the shore. *Bartlett's Reef* lies half a mile, S.S.E., from Stonington Light-house, and has but 4 feet upon it. A *reef*, with 16 feet water upon it, lies N.E. $\frac{1}{2}$ E., half a mile, from Latimer's spindle. A *rock* lies one-eighth of a mile, N.W., of Ellis's spindle, and has 6 feet water upon it, and 5 fathoms between it and the spindle, and 2 fathoms in-shore. A *rock*, with one foot of water on it, lies half a mile, W. by N., from Groton Long Point, and has $2\frac{1}{2}$ fathoms inside. The *Horse-shoe* lies one mile, W. byN., from Groton Long Point, and has but 6 feet upon it, and $3\frac{1}{2}$ fathoms close-to all round. The *Mercer's Rock* has 14 feet water upon it, and lies with Shore Rock on with the large stone house to the northward and westward, and the east hillock on Eastern Point on with a house to the northward and eastward. *Rapid Rock* lies S.E. by S. from the buoy on Goshen Reef, and has but 10 feet on it; the marks for it are Long Rock on with the monument, and the east end of Fisher's Island open to the northward of the North Hammock.

If you should be to the eastward of Watch Hill Light, and bound through Fisher's Island Sound, give the light a berth of not more than one-third of a mile, and steer W. $\frac{3}{4}$ N., until the light on Stonington Point ranges with the highest steeple in the town, when you may steer as subsequently directed into Stonington; or, if bound westward, you may continue your course on, passing the spindle on Latimer's Reef on your starboard hand, about 150 yards, until Stonington Light bears E.N.E., and the spindle on Ellis's Reef N.N.W. $\frac{1}{4}$ W., half a mile, when you will be in 11 fathoms, and may steer W. by S. $\frac{1}{4}$ S., and pass directly between the North and South Dumplings, which are two small islets of moderate height. The North Dumpling is bold-to, except on the east side. On steering the last course, you will leave Ellis's Reef, on which is a spindle on your starboard hand, and East Rock, Middle and West Clumps on your port; the three last are reefs of rocks trending W. by S. and E. by N., between the South Dumpling and Latimer's Reef, along the north shore of Fisher's Island, from which they are distant about half a mile.

South of the Dumplings and Flat Hammock is the west harbour of Fisher's Island, at the back of which is a conspicuous hill named Mount Prospect. There is good anchorage in this harbour in $2\frac{1}{2}$ fathoms, soft bottom, with the Flat Hammock bearing North, and the west point of the harbour W.N.W.

Ellis's Reef, on which is a spindle,† lies South of the house on Ram Island, distant about one-third of a mile; between there is a very narrow passage of 5 fathoms water. Seaflower or Potter's Reef lies N.W. from the North Dumpling, distant three-quarters of a mile, and between there is a fine passage of 5 to 14 fathoms, free from all danger; the reef is of small extent, and has a spindle on it, which may be passed on either side, by giving it a berth of one-eighth of a mile. W. $\frac{3}{4}$ S. from Ram Island, and half-way to Seaflower Reef, is the extreme point of Groton Long Reef, which is a conspicuous point on the north side of Fisher's Island Sound, and may be known by being cleared of trees at the south part; it is not to be approached from the south nearer than half a mile. A shoal, named the Horse-shoe, lies W. by N. from from Groton Long Point, and N.E. by N. from Seaflower Reef; it is partly awash at low water, and in some places has from 6 to 10 feet on it. As no spindle is attached to the Horse-shoe, vessels should avoid going much to the north of Seaflower Reef.

There is good anchorage to the eastward of Groton Long Point, in $2\frac{1}{4}$ fathoms, soft bottom, at one-third of a mile from the shore.

After you have passed Fisher's Island Sound, you should be careful to keep the South Dumpling, named also the South Hammock, in range with the N.E. point of Fisher's Island, to clear the Triangle Rocks, which form the south part of Bartlett's Reef, on which there is a buoy and lightvessel. When Two Tree Island bears N. by

*Although it is stated that these reefs are not marked by buoys or spindles, yet as it is possible that they may after a time be so marked, the list is retained, as the bearings will still be of service.

† This spindle is upon the inner extremity of the reef, and vessels beating through the Sound should pass to the southward, giving it a berth of at least half a mile. The depth will then be about 11 fathoms, soft ground.

W., or Little Gull Lighthouse S.S.E., you are past this danger, and may follow the general directions for sailing up Long Island Sound.

If bound through Fisher's Island Sound from the westward, you should on no account attempt to go to the southward of the South Dumpling, but, after passing either between the Dumplings, or to the north of them, you should bring Stonington Light to bear E.N.E., and, passing to the eastward of the Eelgrass Ground should run for it until the breakwater bears North when you may steer for the anchorage.

If you wish to pass through Fisher's Island Sound, when Stonington Light bears E.N.E., and the spindle on Ellis's Reef N.N.W. $\frac{1}{4}$ W., steer E. $\frac{3}{4}$ S. for Watch Hill Light, leaving Latimer's Reef on your port hand, and giving Napatree Point and Watch Hill Point a berth of about one-quarter of a mile; leaving Watch Hill Reef, marked on its east end by a spindle, on your starboard hand. This spindle bears from Watch Hill Light S.S.W. $\frac{3}{4}$ W., distant about two-thirds of a mile. A rock, named the Gangway Rock, having 2 feet on it, lies S. by W. from Watch Hill Point, distant about one-eighth of a mile.

Eelgrass Shoals lie between Ram Island and Stonington Light, and extend in spots for some distance. The largest of these shoals lies S.W. $\frac{1}{4}$ S. from the White Rock, which is E.N.E. from Ram Island, and half-way to the lighthouse on Stonington Point, and is always conspicuous. You are clear of these shoals when Stonington Light bears E.N.E.

The following instructions for running through Fisher's Island Sound are by Lieut. G. S. Blake, of the United States Navy :—

"Entering Fisher's Island Sound from the eastward, in best water ($4\frac{1}{2}$ fathoms) Watch Hill Light is a quarter of a mile northward, and the spindle or beacon on Watch Hill Reef one-third of a mile southward. Steer W. $\frac{3}{4}$ N., giving Napatree Point a berth of one-quarter of a mile; you will soon see the beacon upon Latimer's Reef to the westward and two similar beacons to the southward; between these latter beacons is Lord's Channel. If bound to Stonington in the day time, when the beacon on the outer or the western extremity of Stonington Breakwater is in range with a large circular building at the head of the steamboat wharf, or at night, when Stonington Light bears N.N.E., steer in N. 16° E. for the end of the Breakwater. Haul close in, round it, and anchor in about 2 fathoms water, soft bottom.

"If bound through the Sound, stand on, leaving the beacon on Latimer's Reef on either side, about one quarter of a mile. East of the beacon, about a quarter of a mile, is a dangerous rock with but 3 feet on it at low water, and 3 fathoms between it and the beacon. When the northernmost of two small islets named the Dumplings, which lie near the western entrance of the Sound, bears W.S.W., run for it, and pass either midway of those islets or to the northward of them. The North Dumpling is quite bold, except to the eastward.

"In following these directions, notice that between Watch Hill Point and Latimer's Reef, the last of the tide sets across the reefs which lie between Watch Hill Point and the east end of Fisher's Island. This set, on the ebb particularly, must be allowed for. On the flood it is not so strong. Lord's Channel should not be attempted by strangers, unless the range (Stonington Light open a sail's breadth to the eastward of the hotel) can be distinguished clearly."

Fisher's Island Sound is perfectly safe with the foregoing directions, and is to be preferred, if bound eastward on the flood, or westward with an ebb tide, to going through the Race, or to the south of Fisher's Island; but it should not be attempted by strangers without a leading wind, and great attention should be paid to the lead.

On Mystic Point, on the North side of Fisher's Island Sound, behind Ram Island, there is a small lighthouse, showing a fixed light, visible 15 miles: and there is also, if not already lighted, intended to be placed a small fixed light on the North Dumpling Island, at the western entrance of the Sound, which will be visible about 10 miles. A small lightvessel is also stated to have been placed off the south end of the Eelgrass Shoal.

Stonington Harbour is situated on the northern side of Fisher's Island Sound. It has at its entrance a fine breakwater, constructed by the United States government, at an expense of 50,000 dollars, A lighthouse, showing a fixed light at 62 feet, has also been erected on the extreme point of land at Stonington, which bears from Watch Hill Point Lighthouse N.W. $\frac{1}{2}$ W., $2\frac{1}{2}$ miles distant; from Napatree Point, N.N.W. $\frac{1}{4}$ W., $1\frac{1}{2}$ mile; from Catumb Reef spindle N. by E., 2 miles; from Wicopessett Island N. by E. $\frac{3}{4}$ E., 2 miles; Latimer's Reef spindle N.E. $\frac{1}{2}$ E., 2 miles; Wampasset Shoal E. $\frac{1}{2}$ N., half a mile, and from the North Dumpling E. by N. $\frac{3}{4}$ N., $5\frac{3}{4}$ miles.

If off the south-east part of Fisher's Island, bring the highest steeple in the town of Stonington open to the east of Stonington Lighthouse, and steer for it N. 6° E. (N. ¼ E.), until Watch Hill bears East, when you will have passed through Lord's Channel, which is between the spindle on Wicopessett Island Ledge and the spindle on Catumb Ledge, you will then be in 12 or 13 fathoms water. Another mark, and a very good one in clear weather is, the hotel open a sail's breadth to the westward of the light-house, which will carry you through Lord's Channel in 6 to 4½ fathoms water. Steer now north-westerly so as to clear the shoal water extending from Bartlett's Reef, until the light bears N. by E., when you may steer directly for the lighthouse, or the break-water, into the harbour. The breakwater has a beacon on its western extremity.

TIDES, &c.

It is high water, on the full and change days, at Stonington (Corrected Establishment) at	9h.	5m.
Mean duration of Flood } Reckoning from the middle of one slack-	5	44
Mean duration of Ebb } water to the middle of the next	5	54
Mean duration of Slack-water	0	25
Height of mean High Water	3ft.	10in.
Height of mean Low Water above the Plane of Reference	1	3
Rise of highest Tides observed	4	7
Mean rise and fall of Tides	2	7
Mean rise and fall of Neap Tides	2	6
Mean rise and fall of Spring Tides	3	0

Stonington Lighthouse is in lat. 41° 19′ 36″ N., long. 71° 54′ 36″ W. Variation of the compass determined in the month of August, 1845, 7° 38′ W.

New London.—This harbour lies a little to the westward of Fisher's Island Sound. The lighthouse on the western side of the entrance to New London bears from the Race Rock, off the west end of Fisher's Island, N. by W. ¼ W., 4¾ miles. A vessel bound to this port, after passing the Race Rock, and S.W. end of Fisher's Island, should keep the light bearing between N.N.W. and N.N.E., if beating to windward; but, with the wind fair, bring the light to bear North, and run directly for it, leaving it on your port side when running in. When in you will find good anchorage in 4 or 5 fathoms of water, clayey bottom.

The lighthouse on the western side of the entrance to New London is 80 feet high, and shows a fixed light at 111 feet above the sea, visible 18 miles. Its position is 41° 18′ 55″ N., and long. 72° 5′ 44″ W.

On the east side of the entrance to New London, and close in-shore, is a rock above water, named the Black Rock, and outside of this, at about three-quarters of a mile, are two ledges named the Black and South-west Ledges,* which have 2 to 7 feet of water upon them, and 5 fathoms between, and are marked by buoys. Between these ledges and the Black Rock is a small ledge of 13 feet, named Frank's Ledge, which lies with Fort Griswold Monument in one with the hollow in Latham's Chair, and a house and rock near the lighthouse in one; close-to, round this ledge, are 4 to 5 fathoms.

On the west side of the entrance to New London there are several rocks which lie off the shore, of which the following are the principal:—A *rock*, one-quarter of a mile, S. by W., from the lighthouse, with 11 feet water on it, and 3½ fathoms inside. *Mercer's Rock*, on Sarah's Ledge, has 14 feet water upon it, and is buoyed; the marks for it are Shore Rock on with a large stone house to the northward and westward, and the east hillock on Eastern Point on with a

* It has been reported that near the South-west Ledge there is a rock not on the charts, of which the following is an account by the master of the vessel which struck upon it. We may remark that on reference to the chart of the harbour (the result of a survey made by the officers of the United States Navy), which was published in 1848, no mention of the rock is made, but on the contrary there appear to be 5½ fathoms at or near the spot alluded to:—"A few days since (May 10th, 1851), while going out of New London Harbour, with a very light wind from the S.W., we struck on a rock about a mile from the lighthouse. The lighthouse then bore N.N.W. Owing to very light winds we soon got our vessel off, without sustaining any very serious injury. Vessels going out of the harbour should be very cautious, as it is no easy matter to get a vessel off rocks like these, and more especially where there is much wind. Probably if there had been a good breeze we should have lost our vessel."

house to the northward and eastward. *Rapid Rock* lies S.E. by S. from buoy on Goshen Reef, and has but 10 feet water upon it; the marks for it are Long Rock on with Fort Griswold Monument, and the east end of Fisher's Island open to the northward of North Hammock. *Goshen Reef;* there are several rocks scattered over the shoal ground around this reef, for which there are no marks, but which are cleared by the ranges for the Middle and In-shore Channels. There are several *rocks* close in-shore, but which can be avoided by not running nearer than 150 yards to the shore. Vessels after passing the lighthouse are often embarrassed in light winds, and after rains by a a strong surface current setting out on the flood-tide.

To run up the harbour in the deepest water, bring the lightvessel off Bartlett's Reef to bear W. by S. $\frac{3}{4}$ S., and New London Lighthouse N. $\frac{3}{4}$ W., distant about $1\frac{1}{2}$ mile, and steer N. $\frac{1}{4}$ E., and it will carry you up in mid-channel in 6 to $5\frac{1}{2}$ fathoms.

To make up *with a head wind.* When outside the South-west Ledge, keep the lighthouse between N.N.W. and N.N.E., but it is advisable not to bring the lighthouse to the eastward of N. by E. When up with the White Rock, before reaching Fort Trumbull, keep the Presbyterian spire open of Fort Point, by which you will clear Melton's Ledge, which lies 150 yards to the eastward of Powder Island, and is marked by a buoy.

If from the eastward. Keep the lighthouse just open to the northward of Smith's house, bearing N.W. by W. $\frac{1}{2}$ W., and it will take you through the Pine Island Channel (the channel between Black Ledge and Pine Island) in from $4\frac{1}{2}$ to 3 fathoms. When to the eastward of Seaflower spindle, keep the lighthouse open to the southward of Pine Island, and it will clear the Horse-shoe and Groton Long Point. When up with Pine Island, which is bold-to there being 16 feet immediately off it, bring Long Rock open to the southward of a large stone house to the westward, and it will clear the north point of Black Ledge.

Black Ledge Channel.—This is the narrow channel between Black Ledge and South-west Ledge; it is about one-eighth of a mile wide, and has a depth of 5 fathoms in it. To run through, you may bring the Presbyterian spire on with Fort Point, or the Eastern Point of the harbour in one with Ocean House, as either of these marks will lead through clear of Frank's Ledge.

Middle Channel.—This is the channel between Goshen Reef and the shore: it is narrow, but has a depth of from 13 to 18 feet. When running from the westward after passing Two-tree Island Channel, bring the large black rock, south of Two-tree Island, on with the first large tree to the northward of the house on Black Point, and you will go through the channel in 13 feet. When up with the buoy on Mercer's Rock, you may steer for the lighthouse, and pass into the harbour.

In-shore Channel.—This is the channel between the Middle Channel and the shore: it lies about one-eighth of a mile from Goshen Point, and amongst the rocks bordering the coast. To run in, follow the above range (the large black rock south of Two-tree Island on with the first large tree, &c.) until Middle Rock is on with Black Rock, which latter mark will take you through the channel in 8 to 10 feet water. Pass 20 yards to the southward of Middle Rock, and then steer for Black Rock until Fort Griswold Monument is open to the eastward of the lighthouse, when you may haul up the harbour, giving Quinnipeag Rocks (the rocks near the lighthouse) a berth of 100 yards. This channel is only to be followed when the wind is from the northward, and with a vessel drawing under 10 feet.

It is high water, on the days of full and change, at 9h. 30m., and the rise of spring tides is about 3 feet. The variation of the compass, observed in August, 1844, was 7° 29′ W.

The town of New London is about 2 miles up the river (the Thames) and immediately opposite is the village of Groton, near which is Fort Griswold.

Some years since the Harbour of New London was surveyed by Mr. Morris, an officer of the American Navy, and from his chart we extract the following remarks:—"If coming in through the Race, bring New London Light to bear North, and steer for it until you pass S.W. Ledge, then steer for the middle of the entrance. When standing up the river, keep rather on the Groton side. There are reefs off Powder Island and White Rock, to clear which, keep the meeting-house in New London well open with Fort Point. Coming up Fisher's Island Sound, keep the light open with the west end of Pine Island about a sail's breadth."

If entering Long Island Sound from the S.E., when bound toward New London, the following precautions are to be attended to:—Observe that the mark for avoiding the

Cerberus Reef, or Middle Ground, is a conspicuous hill, with a notch in the centre, at the back of New London, named Bolle's Hill, which if kept a ship's length open, either to the eastward or westward of Mount Prospect, or the sand hills in the west of Fisher's Island, will lead clear of the shoal in 10 or 15 fathoms to the eastward, and in 8 or 9 fathoms to the westward. The tide sets strongly over the shoal. In scant wind, or a calm, a vessel should anchor before any of the marks or bearings are too near.

A vessel bound for New London having brought the Gull Light to bear W. by N., or the light on Watch Hill Point N.E., may steer so as to bring New London Lighthouse open of Fisher's Island; and when the spire of New London Church, bearing N. 8° W., is in one with the gap on Bolle's Hill, steering with it in that direction will carry you between the Race Rock and Valiant's Rock, or you may bring New London Lighthouse a sail's breadth to the eastward of the church spire, bearing N. 5° E., which will carry you to the westward of the Valiant's Rock, or between that rock and the Gull Lighthouse. Thence steer for New London as hereafter directed.

In case the weather should be thick, and New London church spire is not to be seen, when bound to the westward through the Race, steer for the Gull Lighthouse, keeping it to the northward of West, until New London Lighthouse bears N. ½ E., then steer for it, leaving the Gull Lighthouse at half a mile on the west or port side. When the Gull Lighthouse bear S. by W., you may steer N.N.E. for the Roads, making proper allowance for the tide, which is very strong.

In the winter season, when bound to or from New London, keep well to the westward, should the wind be at N.E. and stormy. Your course, under such circumstances, for a good anchorage, is W.N.W. from the Gull, about 5 miles; then haul up, should the wind continue at N.E., and steer N.W. until you get into 10 fathoms of water, muddy bottom. Anchor as soon as possible. Here you will be to the westward of Black Point, between it and Hatchett's Reef. This is the best place to ride in, with a N.E. gale and thick weather, when the harbour of New London cannot be attained. Here you will see Saybrook Light bearing W. by N. or W.N.W.

Bartlett's Reef.—At about 1¼ mile to the S.W. by W. of the buoy on Goshen Reef, is the south end of Bartlett's Reef, close to which is a lightvessel, bearing a fixed light, visible 8½ miles. This reef runs in a N.N.W. direction, 1½ mile, and is in several parts dry at low water. At the northern end of the reef is Two-tree Island, which has been already mentioned, and there is a buoy at each end of the shoal. The channel between the north end of the reef and the shore, named the Two-tree Channel, is nearly half a mile wide, and has a depth of 9½ to 13 fathoms in it. Close-to all round Bartlett's Reef are 46 fathoms, and you will find 13 fathoms, fine sand and mud, immediately to the southward of the lightvessel.

Connecticut River.—At about 10 miles to the westward of the lightvessel on Bartlett's Reef is Saybrook Lighthouse, which is 65 feet high, and shows a fixed light at 74 feet above the sea, visible 14 miles. This light leads to no good harbour for vessels, therefore it should only be run for by those who are well acquainted with the coast. In sailing along always give the point a berth of three or four miles, and steer on for Falcon or Falkner's Light, leave it on your starboard side, and a S. by W. course will take you to the southward of the Stratford Shoal.

To the westward of Saybrook Lighthouse is Cornfield Point, distant 2¼ miles, from which a shelf stretches out nearly a league to the W.S.W. There is also, nearly parallel to the coast, between Saybrook Lighthouse and Cornfield Point, a narrow bank, which may be called Saybrook Bank, 4 miles in length, the middle of which is a mile and a half south of Cornfield Point; near its shoalest part there is a depth of only 6 to 9 feet at low water. A too near approach to this bank may be dangerous, as the bank is steep-to, and probably increasing, so as to be connected, on the N.E., with the bar of Connecticut River. The bank is the more dangerous as the tide sets athwart it to the N.W. and S.E. From the west end of the bank Saybrook Lighthouse bears N. by E., two miles, and Hammonasset Point W.N.W. ½ W., 5 miles. On the general course above given, for proceeding towards Falkner's Island, the bank will be left at about half a league on the starboard side, and a greater berth may be allowed according to the wind, &c.

The bearing and distance from Saybrook Light to that on Little Gull Island is S.E. by E. ½ E., 11 miles; and to that on the west end of Plum Island S.E. ½ S., 8¼ miles. The bar of the river Connecticut, on the outer edge of which are from 9 to 12 feet of water, extends nearly two miles to the south-eastward from the lighthouse.

Falkner's or Falcon Island Light bears W. ¾ S., 14 miles, from that of Saybrook.

The light is fixed at 90 feet above the level of the sea. At rather more than a mile, E. ½ N., from it, is a small shoal of 3 fathoms, named Kilbuly's Reef; and at a mile to the westward of it is an islet named the Goose, surrounded by a dangerous reef, which extends from it more than half a mile in a northerly direction.

There is good anchorage on the western side of Falkner's Island, with the wind from the eastward. In going in, give the south end of the island a small berth, and anchor with the light bearing E. by S., one-third of a mile, from the island, in 3 fathoms, soft bottom. There is, also, a good and smooth bottom on the eastern side.

NEWHAVEN.—This harbour is about 12 miles to the westward of Falkner's Island, and is distinguished at its entrance by a lighthouse, which stands on Five-mile Point on the starboard side. This lighthouse shows a fixed light at 85 feet above the sea, visible 18 miles; and from it Stratford Point light bears S. 63° W., distant 10½ miles; spindle on Quixes' Ledge S. 1° E.; and Falkner's Island Light S. 74° E., 12 miles.

On advancing towards the harbour the lighthouse appears very conspicuous, but should not be approached too near on account of the ledges which lie off the point. Adam's Fall, a shoal of 4 to 5 feet, is distant about half a mile from the point, and is marked by a white buoy, which bears from the lighthouse S.W., and from the spindle on Quixes' Ledge N.W., about half a mile. Between Adam's Fall and Five-mile Point is a depth of 17 to 16 feet at low water, but no vessel should attempt to run between.

Quixes' Ledge has from 2 to 5 feet on it, and bears from the lighthouse S. by E., distant about three-quarters of a mile. It is marked by a spindle lying with the buoy on the S.W. Ledge; bearing W.S.W., half a mile distant. Between Quixes' Ledge and Adam's Fall is another shoal of 6 feet, the depth between them being 15 feet. Between these shoals and Morgan's Point are 8 to 12 feet, hard ground, but no navigable channel. The Round Rock, dry at low water, is about half a mile east of Quixes' Ledge, and about a quarter of a mile off the shore.

The S.W. Ledge is marked by a black buoy, bearing from the lighthouse on Five-mile Point S. 30° W., one mile, and from the spindle on Quixes' Ledge W.S.W., half a mile. From 5 to 10 feet is the depth on this ledge at low water.

If bound into Newhaven, give Falkner's Island a berth of one mile, and steer W. by N., until the light on Five-mile Point is north of you. You will now be in 6½ fathoms, soft ground, and may steer N.W., giving the lighthouse a berth of 1¼ mile, to avoid the S.W. Ledge, the buoy on which must be left on the starboard hand. When the lighthouse bears N.E.; you may steer up N.E. by N. for Port Hale, leaving the buoy on Adam's Fall on your starboard hand. When nearly abreast of the fort, give it a berth of one-fourth of a mile, and steer up N. ¾ W. for the end of Long Wharf, leaving Black Ledge, which is one-fourth of a mile N.W. of the fort, on your starboard hand.

A little to the north-westward of Fort Hale is a buoy in 15 feet, and above that at about three-quarters of a mile on the opposite side of the channel, is another in 9 feet on the extremity of the shoal ground extending from Sandy Point. Close off the end of Long Wharf are 7 and 8 feet, soft mud. It is recommended when sailing up to keep the lead going; the soundings from Adam's Fall upwards is soft mud.

Coming from the eastward, vessels occasionally pass between the buoy on the S.W. Ledge and the spindle on Quixes' Ledge, as there are 3¼ fathoms between, excepting in mid-channel, where there is one small spot of 10 feet: this lies nearer the S.W. Ledge than the spindle. Steer about midway between the buoy and the spindle, so as to leave the buoy on Adam's Fall at the distance of a quarter of a mile. In bearing up the harbour, the mark to sail westward of Adam's Fall is Fort Hale in range with Fair Haven Spire (a white wooden church); this mark leads you up in from 17 to 14 and 10 feet, soft ground. Give the fort a berth when rounding it, and steer as above directed for Long Wharf, going into not less than 7 feet.

Should you wish to anchor in Morris' Cove bring the light on Five-mile Point to bear S.E., when anchorage may be obtained in 2 fathoms, muddy bottom. Your course thence up the harbour is North, with a fair wind, and in beating up, the above mentioned directions must be followed, to keep the lead going, in order to avoid the hard ground on the western shore, for while you continue on a bottom of mud, no danger can possibly ensue.

Vessels bound in from the westward, must leave both buoys on the starboard hand, approaching no nearer to either of them than half a cable. When beating in, your soundings will be from 2 to 3 and 4 fathoms, but you must be careful to stand no nearer than 2 fathoms on the west shore, on account of the hard ground.

To these directions may be added the following by Lieutenant G. S. Blake, of the U.S.N. :—

"Bring the lighthouse to bear E.N.E., and run for it, until Fort Hale is in range with the larger of two church spires next each other in the village of Fairhaven. You will then be about half a mile from the light in 3 fathoms water, and but a short distance to the westward of the buoy on Adam's Fall Ledge. S. ½ E. you will see the buoy on the S.W. Ledge, and still further to the eastward, the spindle on Quixes' Ledge.

Run into the harbour upon the above mentioned range, Fort Hale and the Spire, until the lighthouse bears S. by E., when you will be in 2 fathoms, soft bottom. Then steer up a little to the westward of the head of Long Wharf, and you will soon deepen into 2¼ and 2¾ fathoms. A little above Fort Hale is a buoy which you leave to the eastward, and ⅝ of a mile further up, another, which you leave to the westward. Soon after leaving this last buoy, you will shoal to 8 and 7 feet, carrying this depth up to the head of Long Wharf."

TIDES.

It is high water, on the full and change days, at Newhaven (Corrected Establishment) at	11h.	16m.
Rise of highest tide	7ft.	7in.
Height of mean High Water	6	4
Mean rise and fall of Tides	5	8
Mean rise and fall of Spring Tides	6	6
Mean rise and fall of Neap Tides	5	1

Newhaven Lighthouse is in lat. 41° 14′ 52″ N., long. 72° 54′ 35″ W. Variation of the compass, as determined at the Newhaven Pavilion in September, 1845, 6° 17′ W.

At about 10 miles to the south-westward of Newhaven Lighthouse is Stratford Point, upon which is a lighthouse 28 feet high, bearing a light, revolving every 2½ minutes, at 44 feet above the sea, visible 14 miles: this lighthouse stands on the west side of the entrance to Stratford River, and is of great use to all vessels beating up to Long Island Sound. There is also a lightvessel bearing two fixed lights, on a shoal, named the Middle Ground, lying nearly in the middle of Long Island Sound: this is a very dangerous shoal, lying about 5½ miles, S. ½ W., from Stratford Point Light, and should not be too closely approached.

BRIDGEPORT AND BLACKROCK HARBOURS.—These harbours lie immediately round Stratford Point, and are much resorted to by the coasters. The entrances to both are shoal, and are marked either by buoys or beacons. Before the village of Blackrock is a low narrow island, named Fairweather Island, upon the south end of which is a lighthouse 40 feet high, showing a fixed light at 45 feet above the sea, visible 14 miles. A reef, partly awash at low water, runs about a quarter of a mile to the southward from the lighthouse, and has on its extremity a buoy. When you have rounded this buoy the harbour will be fairly opened, and you may run up N. ½ E., in 8 to 10 feet.

Bridgeport is but a small place, and has rather a difficult entrance. There is a small fixed red light at 23 feet above the sea, from which the beacon on the Cows bears S.W., distant about 3 miles.

From the coast, at about a mile to the westward of Blackrock, a reef runs off, 1¼ mile, to the S.E. ¾ E., and is dry at low water. At the extremity of this reef there are some rocks awash at low water, named the Cows, and near them is another cluster, named the Penfield's Reef; these rocks lie within the 18-feet line, and have 4½ to 6 fathoms at 1¼ mile to the eastward of them. This reef is marked at its extremity by a beacon, named the Huncher, and there are two buoys along its southern edge.

On running into Blackrock from the westward, bring the lighthouse on Fairweather Island to bear N. by W., in order to avoid the Cows, and when about half a mile from it, you will see the buoy on the extremity of the ledge extending from the lighthouse, which you must pass on the west side, and run into the harbour, where you may anchor in from 11 to 12 feet.

The following instructions for running into these harbours, are by Lieut. G. S. Blake, of the U. S. Navy :—

Blackrock Harbour.—If coming from the eastward, when abreast of Stratford Light (which pass at a distance of 1½ mile to avoid a shoal spot south of it), bring Blackrock Light to bear W. by N. ¼ N., and steer W. ¼ N., keeping it on the starboard bow.

Enter midway between the light and beacon, passing the light until it bears N.N.E.; then haul up N. ½ E. into the inner harbour. Give the lighthouse a berth of from one-eighth to a quarter of a mile, and anchor in 2 fathoms, soft bottom, with the light bearing anywhere from E. to E.S.E.

If coming from the westward, keep in not less than 4 fathoms to avoid Penfield's Reef, to the southward of the beacon, and the Cows to the northward. After passing the beacon, steer East until you bring Blackrock Light to bear N. by W., then run for it until midway between the light and beacon, when you may steer as before.

Bridgeport Harbour.—The entrance to this harbour is obstructed by bars, the outer one of which has been deepened by dredging, and the cut, which is three-eighths of a mile long, is indicated by a spar buoy at each end in line with the deepest water. The inner or northern buoy bears from the outer buoy N. ¾ E., distant three-eighths of a mile.

To run in, keep these buoys in one, passing the inner one close upon the starboard bow, to pass the outer bar; then keep a couple of cable's length south-easterly, or outside of the line of the north-east and south-west beacons upon the edge of the western flats, standing on across the inner bar in from 6 to 10 feet water. Haul up round the north-east beacon, deepening to 16 feet, when a spar buoy, which marks the north-east point of the western flats, will bear N.W. by N., five-eighths of a mile distant. Run up through the channel for the town, keeping this spar bucy a little on the port bow."

Blackrock Lighthouse is in lat. 41° 8′ 28″ N., and long. 73° 13′ 25″ W. The variation of the compass, determined in September, 1845, was 6° 19′ W. It is high water, on the days of full and change, at 11h. 11m., and the rise of spring tides is about 8¾ feet.

There is safe and good anchorage to the eastward of Fairweather Light, in all winds from W.S.W. to N.N.E., for full 2 miles, quite down to the mouth of Bridgeport Harbour. The shore on the eastern side of the light is bold, having 3 fathoms close to the light, and continuing as far as the south point of the island. This bay is considered one of the best places for anchorage on the north shore of Long Island Sound, having 4 to 3 fathoms water, with the light bearing west. In coming hither from the eastward, after passing near Stratford Point Light, the course to Blackrock Light will be W. by N., and you keep in to soundings on the starboard side of not less than 4 fathoms; and outward, or on the port side, to not more than 8 fathoms.

Norwalk Lighthouse is about 16 miles to the south-westward of that on Stratford Point. It stands on Sheffield Island, at the western entrance of Norwalk River, and is 30 feet high, showing a light revolving every 2½ minutes at 40 feet above the sea, visible 14 miles; it appears alternately of a red and white colour, by which it may readily be distinguished from the light on Stratford Point.

The entrance of Norwalk River is obstructed by several islets, which are connected more or less by sandy shoals. Of these islets we have no description, but it is stated that a shoal runs off to the eastward from Cawkin's Island (the eastern islet) about 1½ mile, and has several rocks upon it; and that from Sheffield Island a reef runs out S. 70° W., about 1½ mile, from the lighthouse, and has from 2 to 10 feet upon it, with some dry spots. Upon the extremity of this latter reef is a buoy. Under both Cawkin's and Sheffield Islands there is good anchorage in 12 to 10 feet.

To anchor under Cawkin's Island, bring the highest part of the island (which is a steep bluff on its south-east side, having a few scattered cedars on its summit), to bear N. ½ E., and the centre of Goose Island (which is low and covered with small cedars) to bear W. by N. ½ N., when you will be in about 3 fathoms, sandy bottom, and the channel into the harbour will be open and bear N.W. by N. Run in upon this course (N.W. by N.), keeping in mid-channel between Goose and Cawkin's Islands, and be careful not to get into less than 2 fathoms on either hand. When going in, leave the Channel Rock (which lies nearly a quarter of a mile, S. by W. ½ W., from Cawkin's Island) upon the starboard, and Peck's Ledge (which lies a quarter of a mile N.N.E. from the north end of Goose Island) upon the port side: the channel between these two dangers is three-eighths of a mile wide, with 14 to 17 feet water in the middle. The soundings are irregular, but the depth is not less than 14 feet, until well within Peck's Ledge, when it shoals gradually. Anchor in 10 feet, soft bottom, the bluff on Cawkin's bearing E. by S. Easterly gales cause a very heavy swell in this harbour, but the holding-ground is good, being a mixture of soft mud and sand.

The anchorage under Sheffield Island is excellent in all weathers for vessels draw-

ing 10 feet water. To run in, pass mid-way between the buoy on the extremity of the ledge extending from the west end of Sheffield Island and Fish Island (a small low island covered with cedars lying near the main shore) from which the buoy bears S.E., distant about three-quarters of a mile. Steer E.N.E., shoaling gradually from 4 fathoms to 12 feet on a rather irregular bottom, and anchor in 12 or 13 feet, soft bottom, with the light bearing S. by W. When running in, do not edge too closely towards the reef, because it is steep-to, there being 3 to 4 fathoms close to its edge, but keep fully a quarter of a mile to the northward of the line from the buoy to the light.

Towards the main shore, within the entrance to Sheffield Island anchorage, the water shoalens more gradually than it does towards the edge of the reef extending from Sheffield Island, but you should not edge too near it, as it is not clear of dangers, there being a reef of 7 feet, W. $\frac{3}{4}$ N., one mile, from the lighthouse.

The latitude of the lighthouse on Sheffield Island is 41° 2′ 51″ N., and long. 73° 25′ 32″ W. The variation of the compass at Norwalk, determined in September, 1844, was 6° 46′ W. It is high water at Sheffield Island, on the days of full and change, at 11h. 1m., and the rise of spring tides is 8 feet 2 inches.

There is said to be a ledge at $3\frac{1}{4}$ miles, W.S.W. $\frac{1}{2}$ W., from the light on Sheffield Island, which is mostly in sight at low water. A buoy is placed at some distance from its southern extremity, in 15 feet at low ebb.

At $10\frac{1}{4}$ miles, W.S.W. $\frac{1}{2}$ W., from the lighthouse on Sheffield Island is one on the Captain's Isles, between the townships of Greenwich and Rye. It is 30 feet high, and shows a fixed light at 62 feet above the sea, visible 16 miles. The bearing and distance of this lighthouse from that on Eaton's Neck, is W.N.W. $\frac{1}{2}$ W., $11\frac{1}{4}$ miles.

The Execution Rocks lie near the head of Long Island Sound, and are a dangerous group of rocks of about one-quarter of a mile in extent. Upon them there is a lighthouse 41 feet high, which exhibits a red fixed light at 54 feet above the sea, visible about 15 miles. From this light Sand's Point Light bears S.S.E., distant nearly a mile, and Throg's Point Light S.W. by S., 5 miles.

At about 2 miles to the south-westward of the Execution Rocks is Hart Island, under which there is good anchorage with either easterly or westerly winds. To anchor on the east side you may stand towards a barn which is in the bend towards the south part of the island, and anchor in 3 fathoms, the trees bearing S.S.W., distant half a mile. Should you wish to anchor on the west side, between that and City Island, you may haul close round the south part of Hart Island, and anchor west of the trees, in such water as you think proper.

To the southward of Hart Island is Throg's Point, upon which is a fixed light, and from thence up to New York the passage narrows, but contains sufficient water for the largest ships.

COURSES UP THE SOUND.—From the lighthouse of Newport, or Rhode Island Harbour, the course and distance to a berth off Point Judith, are S.W. $\frac{1}{2}$ S., $6\frac{3}{4}$ miles; thence towards the Gull Light, W. by S., 24 miles, and W. $\frac{1}{2}$ N., $5\frac{3}{4}$ miles. On sailing thus at 7 miles to the S.W. of Point Judith, you will bring in a line the two lights on the north end of Block Island, which will then bear South, and be in the direction of a reef extending a mile from that end of the island. Proceeding thence six leagues, you leave Watch Hill Point Light and Fisher's Island on the starboard or north side; and have to observe that a dangerous reef extends from the S.W. end of Fisher's Island: without this is a rock, named the Race Rock, which is distinguished by an iron spindle. On the port side you leave the Gull Island Light; and having passed this through the Race or main channel, you will have fairly entered Long Island Sound.

The distance from the Race Rock to the Gull Light is $3\frac{1}{2}$ miles; but nearly in a line between, at $3\frac{1}{2}$ miles from Fisher's Island, and 2 from the lighthouse, lies the Valiant or Middle Race Rock, which has only 17 feet over it at half-flood. The marks for it are, New London Lighthouse in one with two conspicuous trees which stand on the declivity of a hill at the back of New London, being remarkable for a gap on its summit N. 4° W.; the western side of the South Hammock or Dumpling, within Fisher's Island, just touching with the north hill or point of that island N. 41° E.; the east bluff of the Great Gull Island, in one with the western lower extreme of Little Gull Island, or the Gull Lighthouse a small sail's breadth open to the eastward of the east part of Great Gull Island S. 64° W.; the north part of Long Island just shut in with the N.W. point of Plum Island S. 76° W.; and Gull Light S. 62° W., and Mount Prospect, or high white sand-hills on Fisher's Island, N. 60° E. Other marks have also been given in page 98.

From the Gull Island Light towards the light on Falkner's Isles, the direct course and distance are W. ¼ N., 8 leagues. From hence a course, S.W. by W. ¾ W., 8 leagues, leads to a berth off Oldfield Point, distinguished by its lighthouse. From a berth off Oldfield Point, a fair course to the middle of the Sound, at four miles beyond Eaton's Neck and its lighthouse, will be W. ¼ N., 5½ leagues, and hence to Sand's Point, W.S.W., 4½ leagues. Here you enter the Strait, with Sand's Point Lighthouse on your port side, and the Execution Rocks on the starboard. The course hence, towards Throg's Point Light, is nearly S.W. by S.

If you pass through the Race with a flood tide and southerly wind, as the tide runs very strong, due allowance must be made. In general, the time of high water, on the full and change days, is at half-past eleven, and the vertical rise is 5 or 6 feet.

Vessels compelled to run up the Sound in a dark night or in thick weather, the best course will be West, towards the lighthouse on Stratford Point. If bound up the Sound, a course S. W. by W. ¾ W. from Falkner's Island Light, 24 miles, will carry you up to Oldfield Point, on which is a lighthouse. You may approach the Long Island shore, without danger, to the distance of 2 or 3 miles, but to the north shore do not approach nearer than 2 leagues, in order to avoid the shoals and reefs on that side.

In the middle of the Sound, and nearly in a line between Oldfield Point and Stratford Point, is the middle ground, named Stratford Shoal, already mentioned as being marked by a lightvessel. A vessel may pass on either side of the shoal, as on the north side are from 3 to 7 fathoms, and on the south from 12 to 17 fathoms.

From Oldfield Point Light to Eaton's Neck Light, the bearing and distance are West, 13 miles. Crane Neck is two miles to the west of Oldfield Point, and the shore between it and Eaton's Neck forms the long bay, named Smithtown Bay, in which the water shoalens gradually from 12 to 3 fathoms. A reef extends from the north shore of Eaton's Neck, to the distance of about half a mile, and near its edge are from 5 to 6 fathoms.

From Eaton's Neck to Lloyd's Neck, the course and distance are, W. ¼ S., 4½ miles. Between lies Huntingdon Bay, in which a ship of any size may anchor with safety, keeping the eastern shore on board.

From Lloyd's Neck to Matinicook Point the course and distance are W.S.W. ½ W., 7¼ miles. Here you may borrow on Long Island to 7 fathoms. The course and distance thence to Sand's Point, are W.S.W., five miles. Between Matinicook Point and Sand's Point lies Hampstead Bay, near the eastern shore of which there is excellent anchorage.

At the distance of about three-quarters of a mile to the northward of Sand's Point lie the Execution Rocks, upon which is a lighthouse, with a fixed light. These rocks must be carefully avoided, leaving them on the starboard hand.

From Sand's Point to Hart's Island, the course and distance are S.W., one league. To the west of the latter, between it and City Island, there is good anchorage, even for the largest ships. In making this course should a vessel be obliged to turn to windward, two rocks must be carefully avoided; of these, one, called Gangway Rock, bears W. 28° S. from Sand's Point Lighthouse, distant 1 mile, and has, or had on it a black spar, floating upright. It should be left on the port side. The other, called Success Rock, bears N.W. by N. from the north-eastern bluff of Coco Bay, half a mile, and has an iron spindle on it. Over Gangway Rock are only 6 feet at low water; it is, therefore, very dangerous. Success Rock is bare at low water. Between the two is the channel, having about 2½ fathoms. These rocks bear from each other N. 40° W., and S. 40° E., about one-third of a mile.

From Hart's Island to Frog Point the course and distance are S.S.W. ½ W., 2 miles; but here you must carefully avoid the Stepping Stones, which are steep-to, and on the port hand. The extremity is marked by a buoy. The soundings on the other side are regular to 3 fathoms. From Frog's Point to Hunt's Harbour the course is West, and distance about 2⅓ miles. In steering for this place, keep as nearly in mid-channel as circumstances will permit.

NEW YORK.—The city of New York is the largest, most wealthy, and flourishing in America. It occupies the southern portion of Manhattan, a narrow island, 14 miles long, formed by the Hudson and the East River, and extends three miles along the bank of the former, and four along the bank of the latter river. Below the city, Long Island, Staten Island, and the main land of New Jersey, form a land-locked bay or harbour, of easy access, sheltered from storms, deep enough for the largest ships, and

sufficiently large to contain all the navies in the world. No city possesses greater advantages for foreign commerce and inland trade; two long lines of canals have increased its natural advantages, and, connecting it with the remotest west, have rendered it the great mart of a vast region, now occupied by a large population, while its facilities of communication with all parts of the world have made it the great thoroughfare of the continent. In 1650, it contained about 800 inhabitants; in 1700, 6,000; in 1756, 10,381; in 1790, 33,131; in 1800, 60,489; in 1810, 96,373; in 1820, 123,706; in 1830, 202,589; in 1840, 312,710.

In 1786 the whole shipping of the port did not exceed 120 in number, with a tonnage of 18,000. In 1836, it consisted of 2,293 vessels, of which there were 599 ships, 197 barques, 1073 brigs and galleys, 412 schooners, and 4 sloops; with a burden of 350,000 tons. In 1791, the whole amount of the exports was £501,093; in 1816, only twenty-five years later, the mere duties on merchandise imported at New York alone, amounted £3,200,000; and in 1840, the value of the exports amounted to £6,146,304; and of imports to £15,053,603. The inland and coasting trade is immense; but of its actual extent and value there is no account. Near the northern end of Mahattan is the village of Harlaem, connected with the city by a railroad 6 miles in length; and on Long Island, opposite New York, stands the city of Brooklyn, with a population of 36,233, in 1840; to the north-east of Brooklyn is Williamsburg, another suburb of the great emporium; and on Wallabout Bay, lying between these, is the United States' navy yard. Several steam-boats at the ferries keep up a constant communication with New York, and a railroad runs eastward through Long Island to Hicksville, a distance of 27 miles. Several of the large Atlantic steamers sail regularly between it and Great Britain.

REMARKS.—*On approaching the land.*—Long Island, from Montauk Point to Sandy Hook, extends W. by S., about 100 miles, and is, at the broadest part, about 17 miles across. The land is generally pretty low and level, excepting a few hills, which lie about 40 miles to the westward of Montauk Point. Along the south side of the island, as already noticed, a flat exiends about a mile from the shore, which runs off in some places about a mile and a half. Your course along this flat, from Montauk Point to Sandy Hook, is S.W. by W. $\frac{3}{4}$ W., 20 leagues, and then W. by S., 14$\frac{1}{2}$ leagues. The east end of the flat is sand: the middle and west parts are sand and stones. At 4 leagues distance from the island, there are from 15 to 18 fathoms water; and from that distance to 20 leagues, the water deepens to 80 fathoms; in the latter depth you will have oazy ground and sand with blue specks in it. About 4 leagues off the east end of the island, you will have coarse sand and shells; and, at the same distance from the middle and west end, there is small white sand. From the S.W. end, there is a shoal which extends, about 6 miles, towards Sandy Hook.

In approaching Sandy Hook, the soundings to the southward are full of black specks, between 10 and 20 fathoms; in the true channel, mud; and to the northward, it is red sand.

Should you fall in with Montauk Point, the east end of Long Island, on which the lighthouse stands as before described, observe that, as its latitude does not differ much from that of the lighthouse on Sandy Hook, you may readily ascertain which it is by the soundings exhibited on the chart. In proceeding thence, westward, for Sandy Hook, you should not approach nearer to Long Island than to the depth of 15 fathoms; and in approaching the Jersey shore, the lead should be constantly hove, as you ought not to stand that way nearer than 10 fathoms, especially in the night or thick weather.

At about 12$\frac{1}{2}$ leagues, E.N.E., from the high lands of Navesink is an inlet on the south coast of Long Island, named Great South Bay, on the eastern side of which, and at the west end of a narrow island, stands Fire Island Lighthouse, showing a light, revolving every minute and a half, which is elevated 89 feet above the level of the sea, and 74 feet from the base. It bears N. 77° 35′ E. from Sandy Hook Lighthouse, distant 12 leagues. From this lighthouse a shoal extends to the southward three-quarters of a mile, and joins the bar, which is very dangerous, as it shoals suddenly from 8 to 6 fathoms, and then directly on the shoal, on which the tide sets very strong. It is not safe to approach the shore nearer than 2 miles, when the light bears to the eastward of North. When the light bears North, in 10 fathoms water, you may steer W. by S. and it will carry you up to the lightvessel at the entrance of New York Harbour. The quality of the bottom is various, viz. :—yellow, red, brown, blue, and grey sand, within short distances.

When coming in from the eastward, and passing the Nantucket Shoals between latitude 38° and 39° 30′, take notice, if possible, when you pass the Gulf Stream; as, at the distance of 10 leagues, within it, you may expect soundings; so soon as you obtain which, you will possibly experience a S.W. current.

Should you now be running for the New Jersey Coast, to the northward of Great and Little Egg Harbours, and being near the land, you may suddenly deepen your water to 13 fathoms. In this case put about immediately, as many vessels have been deceived by a hole in this part, of the dimensions of four acres of land, and some have thus been lost.

If beating to windward of the Hook, when waiting for a pilot or a wind, either by day or night, when the lighthouse bears nearly West, you will be sufficiently near to Long Island. Here the soundings will be of fine white sand; but towards the Jersey shore they are darker and coarser; and in the fair channel will be found as before described.

Should you fall in so far to the Southward as to approach Cape Hatteras, be very cautious of its shoals, and bear away to the N.N.E., so as to obtain soundings on the Jersey shore. When you have gained 20 fathoms in latitude 40°, haul in to make the land.

It has been remarked that ships from sea, approaching any part of the American coast between Long Island and Cape Hatteras, if in doubt about their reckoning, should take notice of what is commonly named the Gulf Weed, which is in great plenty, and in larger clusters to the eastward of the Gulf Stream than in it, where the sprigs are out small and few. Within the stream there is no weed, unless in rare instances, and there the colour of the water changes to a still darker and muddy colour.

The outer edge of the bank off this part of the coast appears to be very steep; for it has been frequently found that, while the lead has been kept going, there have been found 45 fathoms, soon after 35, and a mile nearer shore only 25 or 20 fathoms; from these depths the shoaling to the shore varies in different directions.

The soundings along the New Jersey coast are the most regular, as the water there shoalens from 35 fathoms on the outer edge, to 12 or 10 fathoms in sight of land, and thence to 7 fathoms near the shore; excepting only from 2 leagues south of Shrewsbury Inlet to the bar of Sandy Hook, where the water is deeper. Here are 10 fathoms near the shore, and deeper further out, with some patches of rocky bottom. In latitude 39° 24′ the outer edge of sounding lies 19 leagues from shore, and E.S.E. from Great Egg Harbour, 18 leagues.

If you fall in to the Northward of the Capes of Virginia, approach the Chincoteague Shoals no nearer than in 15 fathoms: from this steer N. by E., until nearly up with Great Egg Harbour, keeping the lead going. You may advance towards this place, and to the northward, to the depth of 10 fathoms. From Great Egg Harbour to latitude 40°, the shore trends about N.E. by N., and thence to the high lands of Navesink nearly N. by E.

When you arrive off the high lands of Navesink, should you not obtain a pilot, you may venture to proceed, by keeping at the distance of 3 miles from the bare part of the land of Sandy Hook, until you come up with the cedar-trees on the Hook. You will now come in sight of the buoys hereafter described, and may pass between them.

Should you fall in so as to make the Capes of the Delaware, keep about 6 leagues off the land, in order to avoid the bank named the Cape May Bank, which lies more than 5 leagues off between Cape May and Hereford Inlet. (This Inlet is frequented by the Delaware pilots, who have no other harbour between it and Egg Harbour.) After passing the bank, which is steep-to, as hereafter shown, you may haul up N.N.E. ½ E., which will lead into 7 fathoms, off Little Egg Harbour. Should you, when abreast of Egg Harbour, be in the depth of 6 or 5 fathoms, you will find white and black sand, intermixed with broken shells; and, by continuing the course N.N.E. ½ E., will deepen to 8 or 10 fathoms, until near Barnigat. Here the soundings will change considerably, especially near Barnigat Shoal, on which is an admixture of mud, shells, and gravel. The shoal does not extend more than 3 miles from the beach, and is steep-to. You may pass along it, in 6 fathoms, within pistol shot of the outer breaker.

In passing Barnigat Shoal, during the night, keep at least in 9 or 10 fathoms; so soon as you have passed it in this depth, you will certainly have fine white sand, and very hard bottom; having these soundings, you may haul in for the land N. by E. ½ E., on which you will have from 10 to 18 fathoms; but, if the weather permits, you may haul in N. by W., or N.N.W., which will bring you in with the southernmost part of

the Woodlands. which is a remarkable part of the coast there being no other like it between Cape May and the high lands of Navesink.

Barnigat may be readily known in the day, even when the breakers are not seen, as there is a long grove of wood, back in the country, apparently 3 or 4 miles long, directly within Barnigat Inlet, commonly named the Little Swamp. With the north end of this land directly abreast, you will be to the northward of Barnigat.

There is another grove, directly in the rear of Egg Harbour, which is known by the name of the Great Swamp; and that this may not be mistaken for the former, observe that the Great Swamp appears much higher, and is 8 or 10 miles in length. These swamps cannot be seen at one time, as the distance between Egg Harbour and Barnigat is 8 leagues.

Barnigat lies S. by W. ½ W., 45 miles, from Sandy Hook. When hauling in for the Woodlands already mentioned, with the wind off shore, you may keep within a cable's length of the coast, until up with the high lands; and, should your vessel not draw more than 10 feet, may continue your course until up with the northernmost part of the cedars on Sandy Hook; after which steer according to the subsequent instructions. When nearing Sandy Hook there are some shoal spots of 10 and 20 feet, about 2½ miles before reaching the entrance of Shrewsbury Inlet, and along the shore of Sandy Hook there are some banks of 10 to 17 feet, named the Middle Ground, Oil Spot, &c.; these must be cautiously avoided.

THE HARBOUR.—The entrance of New York Harhour lies between Sandy Hook, distinguished by its lighthouse, and the extensive flats which run off from the west end of Long Island. Over these flats there are channels, suitable for various classes of ships, which are in general buoyed; but the main ship channel lies to the southward of them all, and has a depth of water of from 5 to 7 fathoms, except at the entrance, where there is a bar of about 20 feet water. When round the shoals there are from 5 to 7 and 10 fathoms in the channel-way up to New York, and buoys on each side; the deepest part of the channel appears to be between Long and Staten Islands, where there are as much as 13 and 17 fathoms water.

On the southern side of he entrance to New York Harbour are the Highlands of Navesink, the highest part of which, Mount Mitchell, is estimated to be 282 feet above the sea. This high land of Navesink is a very important mark when approaching the coast, as it can be seen when you are 8 leagues off, and in a depth of 30 fathoms water. It appears at first like an island, being pretty level on the summit, excepting some irregular risings towards Point Comfort, on the west end or inland side. As you approach nearer to the harbour, you will see some other high land, situated more at the back of the bay, the first of which may be Hempstead Hill, in Long Island, the summit of which is about 320 feet above the sea level. On Staten Island is Tompkins Hill, at the back of the small village, named Tomkinsville, which is estimated to be 307 feet high. Both these hills will be seen after you have made Navesink.

On the Navesink Hills there are two lighthouses, 40 feet high, at about 100 yards apart, which show the lights at an elevation of about 246 feet above the sea, visible 30 miles. The northern light is a fixed light, and the southern one a revolving. Latitude of the buildings 40° 23′ 40″ N., and longitude 73° 59′ 30″ W. The bearing and distance between the northern light and the lighthouse on Sandy Hook, are N. by W., 3¾ miles.

On Sandy Hook there is a lighthouse, 77 feet high, which shows a fixed light at 90 feet above the sea, visible 20 miles off; and a little to the W.S.W. of this is the telegraph, on a white tower, from which signals are made to New York. There are also two beacons near the lighthouse which are lighted at night.

In the entrance of the bay, and outside the shoals, there is a lightvessel, moored in 15 fathoms, which shows two fixed lights, visible about 12 miles. Its position is with the lighthouse on Sandy Hook, W. by N., 6¼ miles, and Navesink Lighthouses, W.S.W., 7 miles. A bell is rung in foggy weather.

Besides these lights there are others inside the bay, which willbe described in their proper place.

At about 3 miles to the southward of Navesink Lighthouses, there is a small patch of 10 to 20 feet water, named Sandy Hook Ledge, which lies about three-quarters of a mile from the shore, and has deep water of 4 to 8 fathoms close-to outside it. It lies S. by E., 7 miles, from Sandy Hook Lighthouse, and S. by E. ¾ E., 3¼ miles, from Navesink Lighthouse, and must be cautiously avoided by all vessels coasting Navesink from the southwards. The mark for it is the northern light of Navesink

a little open to the eastward of the southern one, which mark will lead directly on the reef.

Along the coast of Sandy Hook, to the southward, there is a series of small shoals, upon which the depth is from 14 to 15 feet water. Within these shoals there is a narrow channel of 4½ to 3 fathoms, named the False Hook Channel, the direction of which lies round the end of Sandy Hook; this channel is only fit for very small vessels. The first of these shoals is the False-Hook, which at present consists principally of a shallow spot of 12 feet water, which lies at the distance of 1¼ mile, East a little northerly, from Sandy Hook Lighthouse. To the southward of this is the Oil Spot, a small spot of a triangular form, of about three-quarters of a mile in extent, which lies at 1¾ mile, E.S.E., from the same lighthouse; on one spot, near the middle, are only 10 feet water, but, in general, 12 to 15 feet may be found upon it. To the southward of the Oil Spot is the Outer Middle Ground, which is a shallow of about 12 to 15 feet, and has an extent of about 1¾ mile. Immediately outside these shoals are 4 and 5 fathoms.

False Hook or Along-shore Channel.—This channel lies between the shoals just mentioned and Sandy Hook. It has a N. by W. direction, with a depth of 4½ to 5 fathoms, excepting at the point of the Hook, where there is a narrow ledge of 17 feet, joining the False Hook Shoal. This passage is not recommended unless you are of so light a draught of water as to draw only 10 feet.

If bound into New York from the southward, and close in with the Jersey shore, you may continue on until you get Sandy Hook Light to bear West or W. by N., when you may steer N. by E., to avoid the point of the False Hook, until you get into deep water, say 7 fathoms, Sandy Hook Light bearing S.W., then steer W.N.W. until the light bears S. by E., then with the flood tide steer North, or with an ebb tide N.N.W., (the true course is N. by W.,) which will carry you over the East Bank, and up to the buoy of the Middle.

In going over the East Bank, be careful that you do not get set on the Romer by the ebb tide. The mark to keep clear of this bank is the lighthouse at Sandy Hook open with the east end of the Highlands.

South Channel.—This channel lies to the eastward of Sandy Hook, and outside the False Hook, Oil Spot, and Outer Middle Ground. It is marked by a white can buoy, bearing E. ½ S., 1¾ mile, from the Hook Lighthouse, and South a little westerly, 1¼ mile, from the black buoy of the North Channel. This buoy ranges with the west beacon and the block-house, and is in 24½ feet in mid-channel, directly upon a line drawn from the east beacon to the lightvessel. Between the buoys are two shoal spots of 16 feet at low water. The least water in the channel is 21 feet, and its general direction is W.N.W. and E.S.E.

When running for the white buoy give the Jersey shore a berth of three miles. When up with the buoy steer N.W. if with an ebb tide, but N.W. by W. if flood, which will carry you into the Main Ship Channel, when you can proceed as hereafter directed.

The North Channel to the northward of the channel just mentioned, is marked on its northern side by a black can buoy, which lies in 24 feet, with the lighthouse on Sandy Hook bearing W. by S., 3 miles, and the same lighthouse in line with Mount Pleasant on the Jersey shore. This is a round hill or rising ground about 13 miles inland from the lighthouse. This channel lies due East and West, and forms the continuation of the Main Ship Channel. The least water in it is 20 feet.

Coming from the eastward, along the shore of Long Island, and having made the Highlands of Navesink, upon which you will perceive the lighthouses already noticed, bring Sandy Hook Lighthouse in one with Mount Pleasant bearing W. by S. This bearing will lead you to the black can buoy, when having passed it to the southward, a West course will take you into the Main Ship Channel.

Gedney's Channel is to the north of the black can buoy of the North Channel, and is perhaps the best entrance to New York Harbour, as it can be used by vessels of the largest class, drawing as much as 24 feet at low water. The channel runs nearly W. by S. and E. by N., the general depth being from 4 to 5 fathoms. It was discovered by Lieut. T. R. Gedney, of the U.S. Coast Survey.

This channel has lately been buoyed, and many ships now use it when running into the Bay of New York.

Bring Sandy Hook Lighthouse to bear W. by S., the black buoy of the North Channel will then be in one with it, and the granite beacon on the N.W. part of the Dry

Romer W.N.W. You must then steer W.N.W. with an ebb tide, or W. by N. with a flood, until you get into 6 fathoms water, when the lighthouse will range with a clump of trees on the Highlands, having its eastern side cut down square. From this position you can steer towards the east beacon on Sandy Hook, keeping it a little open on the port bow, until you get in mid-channel between the Hook and the buoy on the east end of Flynn's Knoll, whence you can steer West towards black buoy on the S.W. Spit, so as to give it a berth of about 200 yards on your starboard hand.

Swash Channel.—The Swash Channel is a gatway lying in a N.W. and S.E. direction from Gedney's Channel. The depth of water in it is from 3 to 4 fathoms, but to a stranger a pilot is perhaps necessary as the navigation is somewhat intricate. The north side of it is formed by an extensive sand which nearly dries at low water. This lies N. by E., about 4 miles, from the lighthouse on Sandy Hook.* The leading mark through the channel is, a white house on the east side of Staten Island on with the gap in the hills on the island bearing N.W. This will lead you up to the black buoy of the Upper Middle, rounding which you must keep the Narrows open, and steer for the light on Robin's Reef; from thence to the city you keep the Battery open with the west side of Governor's Island. When entering the channel you must be particular that you leave the black spar buoy on the east end of Flynn's Knoll on the port side.

East Channel.—This channel lies to the N.E. of the Romer, and has a depth of from 3 to 5 fathoms. It is buoyed throughout, the buoys, 10 in number, being placed on the shoalest parts of the gatway, and in no case whatever should a vessel go beyond the buoys on either side; they are coloured black and white, in horizontal stripes, on the port hand, and on the starboard red and black.

The first buoy on the port hand coming in, is in				25	feet water.
„ second	„	„	„	19	„
„ third	„	„	„	24	„
„ fourth	„	„	„	24	„
„ fifth	„	„	„	24	„
The first buoy on the starboard hand coming in, is in				19	feet water.
„ second	„	„	„	19	„
„ third	„	„	„	24	„
„ fourth	„	„	„	24	„
„ fifth	„	„	„	24	„

The course in, after entering the channel, is W.N.W., by compass, until Sandy Hook and the Highlands lights are in range. Keep these in range, and run up for the Narrows, which will carry you clear of everything.

There is a true tide setting through the channel, the time of high water the same as at Sandy Hook, viz.:—full and change 7h. 35m.

Lights, &c.—Within the harbour in Raritan Bay, on the west side of Prince's Bay, is a fixed light at 30 feet from the base of the building. It stands on a hill, the top of which is 77 feet above the sea, bearing N. 71° W., distant about 10 miles, from the lighthouse on Sandy Hook, and West, about 9 miles, from the white buoy of the Knoll. It is shown from eleven lamps, facing the E.S.E., and elevated 107 feet above the sea.

From Prince's Bay Lighthouse the point of the Navesink Hills bears S. 40° E.; Sandy Hook Lighthouse S. 51° E., distant 10 miles; and the spar buoy, on the north side of the Round or Middle Shoal, at the entrance of Prince's Bay S. 86° E.

A fixed light at 40 feet near Fort Tompkins, situated on the eastern extremity of Staten Island, and forming the western side of the entrance to the Narrows. The light is 90 feet above the sea, and forms a good object to vessels approaching the Narrows.

Robin's Reef Light marks the extremity of the flats forming the western boundary of the channel up to the city; on them is 1 and 1½ fathom. This light bears N. by E., 3½ miles from the light at Fort Tompkins.

* On the N.W. extremity of this shoal is a beacon built of granite 25 feet high and 9 feet above the water, but it has been remarked that it should have been on the other end of the shoal, as vessels would undoubtedly go ashore were they to run for it. It bears from the lighthouse on Sandy Hook N. 10° W., and S. 15° E., from the light near Fort Tompkins at the entrance of the Narrows.

Prince's Bay.—Should you wish to run for Prince's Bay when you are in Sandy Hook Bay, bring the light on the hill at the western side of the bay to bear W.N.W., and run for it, anchoring as near the shore as you please. S.E. by E. ½ E. from the light will take you on the north point of the Round or Middle Shoal, on which a black spar buoy is placed; this buoy is left on the port hand when going in, but as it is liable to be carried away by the ice, the light should never be brought to the northward of W.N.W.

Buoys, &c.—Throughout the harbour the shoals and channels are marked by can and spar buoys. The principal, and those that are most used, are the can buoys, which remain in their position, excepting in the winter time, when on account of the ice, they are substituted by spar buoys. The spar buoys are coloured black and white, and are arranged in such a manner that on coming in from sea, the black ones are to be left on the starboard, and the white on the port side.

The following spar buoys were laid down by order of the Congress, and are placed intermediately with the can buoys:—

Five black spar buoys between the black can buoy of the bar and the black can buoy of the S.W. Spit.

Four black spar buoys between the black can buoy of the S.W. Spit, and the black can buoy on the Inner Middle Ground.

Three black spar buoys along the edge of the East Bank, between the black can buoy of the Middle and Coney Island. This is a small island separated from Long Island by a narrow creek.

Four black spar buoys on the ledge of the shoal opposite Gowanus Bay in the Narrows, and

One black spar buoy on the east end of Flynn's Knoll on the northern side of the Main Ship Channel, which, by ships entering the Ship Channel, must be left on the starboard hand.

The following are also placed on the west side of the main Ship Channel:—

Four white spar buoys between the white can buoy of the South Channel and the point of Sandy Hook.

One black spar buoy on the north side of the Round or Middle Shoal, opposite Prince's Bay.

Six white spar buoys on the edge of the West Bank, between the white can buoy of the Knoll, and the can buoy of the West Bank.

Four white spar buoys between the can buoy of the West Bank and Staten Island.

Three white spar buoys between the point of Robin's Reef and Bedloe's Island.

The following are can buoys:—

A black buoy lying in 24 feet, marking the north side of the North Channel, mentioned in page 114.

A white buoy in 24½ feet, marking the South Channel, mentioned in page 114.

A black buoy on the S.W. Spit, with Sandy Hook Lighthouse bearing N.W. by W., distant 2¾ miles; from the buoy the lighthouse and west beacon appear in one.

A white buoy on the Knoll bearing N.W. ½ N. from Sandy Hook, distant 4 1-10 miles, and Prince's Bay Lighthouse East, about 9 miles.

A black buoy on the Upper Middle, with Sandy Hook Lighthouse bearing S. 15° E., distant 5 miles; from the buoy the lighthouse and east beacon appear in one.

A white buoy on the West Bank, with the lighthouse on Sandy Hook bearing S. 15° E.; from the buoy, Snake Hill, in Jersey, appears in one with the hill upon which Prince's Bay Lighthouse is erected.

DIRECTIONS.—Coming from the southward, and intending to enter by the South Channel, you must give the Jersey shore a berth of three miles, in order to avoid the Outer Middle, and when you are up with the white can buoy, marking the channel, steer N.W. with an ebb tide, but N.W. by W. if flood, which, as already noticed, will carry you into the Main Ship Channel.

To enter by the North Channel, follow the directions given in page 114.

When you have entered the Main Ship Channel, you may steer in West, towards the point of the Hook, keeping the lighthouse well open on the port bow, taking care, if it is flood, not to be set too far to the northward, and if ebb, to the southward, as outside the harbour the flood sets to the northward, but inside to the westward. In approaching the lighthouse you must not haul too near the shore, on account of the bank at the False Hook: by keeping about a mile from the beach you will avoid it. When abreast of the Hook, so that the lighthouse and east beacon range, keep within

half a mile of the shore, to avoid Flynn's Knoll, on which are only 7 feet water. This bank lies N. by W., $1\frac{1}{2}$ mile, from the light, and seven-eighths of a mile from the point of the Hook, and has on its east end a black spar buoy. After you have come abreast of the Hook, you must continue your westerly course, running for the buoy on on the S.W. Spit, but go nothing to the north of this course, lest you be set on Flynn's Knoll above-mentioned. When up with the buoy on the S.W. Spit, give it a berth of full 200 yards on the starboard hand.

But if desirous to anchor, you may, when you have got so far in as the point of the Hook where the beacons stand, haul into Sandy Hook Bay S.W., giving the Hook a berth of a mile, until the lighthouse bears E. by N., or E.N.E., when you may anchor in from 4 to 6 fathoms, muddy bottom.

Proceeding to New York, and having given the above-mentioned berth to the buoy on the S.W. Spit, steer N. by E. $\frac{1}{4}$ E. for the black buoy of the Upper Middle, which is $2\frac{3}{4}$ miles distant from the buoy on the S.W. Spit. Here the light on Sandy Hook and the east beacon will appear in one, but be careful that you are not set on the West Bank, marked by the can and spar buoys, as with the young flood the tide sets from $2\frac{1}{2}$ to 3 knots to the westward.

When up with the buoy of the Middle you should steer N. by E., until you pass the white buoy on the edge of the West Bank; northward of the buoy is a narrow bank of sand which dries at low water. The mark to keep in mid-channel, clear of this bank, is Robin's Reef Light well open of the eastern point of Staten Island, on which the light of Fort Tompkins is placed.* When up with the buoy of the West Bank you will open two hummocks in Jersey, of which the westernmost is named Snake Hill; keep this hummock open with the bluff of Staten Island, and steer N. by W., which course will carry you through the Narrows.

Sailing through the Narrows, in order to avoid Fort Lafayette, you must keep Staten Island shore well on board.

The mark to pass the upper part of the West Bank and Fort Lafayette is to keep Bedloe's Island open with the westernmost point of Long Island; for, if you can see Bedloe's Island in coming through the Narrows, there is no danger from the Narrows up to New York. You will steer up for Bedloe's Island to avoid the Mud Flat which you leave on your starboard hand. This flat is a kind of oyster bed, or bank of mud and shells, and has not more than 11 feet over it at low water; but to avoid this flat do not stand too far to the westward, on acconnt of Robin's Reef, now marked by a light-house, upon the west side, to avoid which the mark is to keep the point of land, up the North River, on which Lee Fort stands, open with the east side of Bedloe's Island. Exclusive of the dangers here described, there is nothing to obstruct the navigation to New York, the coast being very steep near the point of Governor's or Nut Island, and the rocks near the battery point do not extend above 100 yards from shore.

Upon the Mud Flat are four black spar buoys which must be left on the starboard hand, and three white spar buoys are placed on the shoals between Robin's Reef and Bedloe's Island.

Having rounded the S.W. Spit buoy, you will observe, on the Jersey shore, above the Narrows, two hummocks of land, each forming like a saddle. The easternmost of these hummocks kept just open with the bluff of Staten Island, is the leading mark up Channel from the spit clear of the Upper Middle. Having sailed 5 or 6 miles with this mark open, haul more to the eastward until you open the other or western hummock; and, by keeping both open, when sailing up, you will avoid the West Bank, as well as the Middle Ground, and may thus pass up the channel-way through the Narrows. When thus far, you must, as already noticed, to pass Fort Lafayette, keep Staten Island shore on board.

In the directions above, the instructions are given as for slack water, those following them should bear in mind that the flood tide, below the Narrows, sets to the west-ward and the ebb to the eastward.

Other Directions.—After making the Highlands of Navesink, which appear to the southward of Sandy Hook, you may run in boldly to within 3 miles of the beach; and run along to the northward, in about 8 fathoms water, until you bring the light-house on Sandy Hook to bear W. $\frac{1}{2}$ N., you will then have a round hill, named Mount Pleasant, previously mentioned, in one with the land about a quarter of a mile to the southward of the lighthouse, and will be in a situation for passing the bar: steer in

* Or Snake Hill kept open of the bluff of Staten Island, will also clear the dry sand.

W. by N. until over it, and you will have on it, at low water, $3\frac{1}{2}$ fathoms. When over it you will have $4\frac{1}{2}$ fathoms. Pass the Hook at half a mile distance, as before directed. So soon as the Hook Point, on which the beacon stands, bears S.S.E., you may haul to the southward, and round the Hook, and anchor in 5 fathoms, good ground, with the Hook bearing from E. to N.E.

	H.	M.
It is high water on the full and change days, at Sandy Hook, at	7	29
But the stream of tide continues to set in, at the rate of two knots, until	9	0
At New York, in the East River	9	0
At New York, in the North or Hudson's River	11	0

The vertical rise of tide is about 7 feet, but it is sometimes checked by the westerly or north-westerly winds, so as to lower the water on the bar to $3\frac{1}{2}$ fathoms. Easterly or north-easterly winds have frequently raised it to 5 fathoms.

The flood sets strongly to the westward from the S.W. Spit, until above the Upper Middle, whence it runs up in the channel course to the Narrows.

THE EAST RIVER, FROM NEW YORK, UPWARDS.—The tide, during the last quarter ebb, sets from the North or Hudson's River around Fort Point, and flows up the East River, at the rate of 3 knots; whence, with a like velocity, it returns 2 hours before the North River at high-water time. This is a great convenience to ships in shifting their berth from one river to the other. Ships of war may, during the summer season, ride in either river, in the stream; in the winter they haul-to, or moor between the wharfs. The Diamond, Quince's and Prince's Reefs off the town, at the entrance of the East River, generally appear by the rippling of the tide.

The best passage up the East River is to the northward of Governor's Island, keeping mid-channel until you are past the rocky flats off Long Island (opposite the Careening Yard, and the south-east reef of New York Island,) which runs out 150 fathoms in a southerly direction from Red Bank; from this, the Long Island shore is bold to Brunswick Creek, where it shoals a little way off Pat Point.

In order to clear York Island Shore Flat, opposite Brunswick Creek, borrow towards the creek, keeping the water-mill in Wallabout Bay on or open westward of Bruckland church spire (on a hill to the westward); you may sail close under the bold rocky cliffs on the western shore.

Blind Rock and Governor's Table Rock extend S.W. 600 fathoms, on a range from Blackwell Island. The channel on the west side of the island is clear, and throughout deep, a boat's length from the shores. There is a sunken rock two-thirds of the way up the channel, and about 30 fathoms from the starboard shore.

Before you enter into either of the Blackwell Island Channels, if flood, let the tide be nearly spent; if ebb-tide, endeavour, by stemming the stream, which continues swift until a quarter of an hour before the turn of the tide, to reach Hell-gate at low water slack, the most desirable time to get through. As you run up between Flood Rock, which is steep-to, and the Point of Long Island, bear up more easterly, keeping the mid-channel. The least drain of tide will show the Hog's Bank dangers on your port, and the Pot Rock on your starboard, by the uncommon ripple and boiling appearance of the water.

There is sufficient depth for large ships, until you come up with Marsh Isle, where it shoalens, and forms a bar across the channel, with only four fathoms at the top of high water; and, about a third of the way over from the isle, there is a single rock, with no more than 10 feet water.

To return through Hell-gate, high water slack is the most convenient time, as the tide is favourable down to New York; there is, however, sufficient depth at low water for any ship in the Gate. Should the pilot have miscalculated the tide, and the ship, with a strong favourable tide and a leading breeze, be advanced near the Gate, you must attend the true set of the stream, in which you may easily keep the ship with lofty sails; low sails being liable to be becalmed by the land. The principal ebb-stream leads round the Mill Rock, which is very bold, whence it turns short to the southward by Flag-staff Point, in the western Blackwell Island Channel. The passage between Mill Rock and Scott's Cap is deep, but very narrow. The southernmost passage, between Flood Rock and Long Island, is used on the flood only, when the stream leads fair through.

LONG ISLAND SOUND FROM THE EAST RIVER.—From Marsh Island eastward, the Sound is navigable for the largest ships. The stream continues moderate

for about 3 leagues to Frog Point, where the New York tide, meeting the Sound tide in contrary directions, causes a perfect stagnation. The Ship Channel is to the northward of the Two Brothers Isles and Halett's Island, observing to keep near the main until past Lawrence Reef (which extends one-third channel over from the east point of Flushing Bay); and thence keeping clear of the north shore until you have doubled Frog Point Peninsula. Your course to New City Island is about N. by E. You must observe not to borrow towards the east side of the Peninsula, on account of the mud flat extending from it towards New City Island anchorage. The Stepping Stones (partly dry at low water) leave a sufficient channel to the northward to work up or down. The Executioner's Rocks (dry at half-tide) lie north-east, two miles, from Hart's Island, and north, about one mile, from Sand's Point Lighthouse: the channel to the southward of them is the most frequented. Here the Sound widens, and affords secure anchorage in the bays of Long Island, as before described.

TIDAL OBSERVATIONS.—The following is the result of a series of observations made by the surveyors, during the years 1836, 1837, and 1844.

Corrected Establishment of Sandy Hook	7h. 29m.
Rise of highest tide observed above the plane of reference, May 30th, 1836, during a heavy gale from E.N.E.	8ft. 1in.
Height of mean low water, above the plane of reference	1 0
Height of mean high water, above the plane of reference	5 9.6
Mean rise and fall of tides	4 9.6
Mean rise and fall of spring tides	6 3.4
Mean rise and fall of neap tides	3 9.8

The mean duration of flood and ebb tide, reckoning from one slack-water to the middle of the next, from observations made in 1844, is

At Sandy Hook,	flood,	5h. 59m.
"	ebb,	6 1
"	slack-water at flood,	22
"	slack-water at ebb,	20
At Govenor's Island,	flood,	5 57
"	ebb,	6 17
"	slack-water at flood,	29
"	slack-water at ebb,	28

Observed at Govenor's Island.—Corrected establishment, 8h. 19m.

Rise of highest tide observed above the plan of reference, October 31st, 1837,	7ft. 4in.
Height of mean low water, above the plane of reference,	0 10.3
Height of mean high water, above the plane of reference,	5 7
Mean rise and fall of tides	4 8.7
Mean rise and fall of spring tides	5 8
Mean rise and fall of neap tides	3 8.7

The following observations on the direction and force of the currents in the harbour and vicinity were made, in 1844, by Lieutenant Chas. H. Davis, of the United States Navy. The rate is in miles per hour, and the observations were made as much as possible when the influence of the wind was small :—

Class.	No.	STATIONS.	1st Quarter.		2nd Quarter.		3rd Quarter.		Flood or Ebb.	
			Direction.	Rate.	Direction.	Rate.	Direction.	Rate.	Direction.	Rate.
Class 1st.	1	2 miles E. of the No. Channel	N. 88¼° E. S. 68 E.	0.5 0.6	0 20° W. S. 54 E.	0.9 1.0	N. 45½° W. S. 41 E.	0.9 1.0	N. 45°½ W. S. 41 E.	0.5 Flood 0.5 Ebb
	2	3 miles S. of Duck Bar Island	N. 53½ W. East	0.5 1 0	N. 41 W. S. 58 E.	0.5 1.5	N. 31½ W. S. 42½ E.	0.5 1.5	N. 9½ W. S. 25½ E.	0.5 Flood 1.0 Ebb
	3	1 In the North Channel	N. 87½ W. S. 73 E.	1.0 1.2	N. 48½ W. S. 73 E.	1.3 2.5	N. 74 W. S. 73 E.	1.3 2.5	N. 67 W. S. 59 E.	1.0 Flood 1 2 Ebb
	3	2 In the South Channel	N 47 W. S. 30 E.	1.0 1.2	N. 51 W. S. 49 E.	1.5 2 3	N. 47 W. S. 49 E.	1.5 2.5	N. 20½ W. S. 49 E.	1.0 Flood 1.2 Ebb
	4	In Main Ship Channel N. of Sandy Hook	S. 61 W. N. 36 E.	1.0 1.5	N. 83 W. N. 48 E.	1.7 1.5	N. 52 W. N. 55 E.	1.7 1.5	N. 43 W. N. 74 E.	1.0 Flood 1.3 Ebb
	5	Half a mile W. of S.W. Spit	S. 38 W. S. 87½ E.	1.0 0.5	S. 87½ W. S. 66 E.	1.2 1.0	N. 78½ W. S. 66 E.	0.6 1.0	N. 78½ W. S. 62 E.	0.5 Flood 0.5 Ebb
Class 2nd.	1	In Gedney's Channel	N. 51 W N. 30 E.	1 4 2.0	N. 71 W. N. 73 E.	2.0 2.9	N. 71 W. S. 76 E.	1.8 2.0	N. 71 W. S. 76 E.	1.4 Flood 1.4 Ebb
	2	East entrance of the Swash	N. 56 W. N. 64 E	1.5 1.5	N. 62 W. S. 55 E.	1.5 2.0	N. 62 W S. 47 E.	1.8 2.0	N. 62 W. S. 47 E.	1.6 Flood 1.5 Ebb
	3	East entrance of East Channel	N. 45 E. S. 89 E.	1.0 1.4	N. 3 W. S. 75 E.	1.6 1.8	N. 13½ W. S. 71 W	1.6 2.2	N. 13½ W. S. 71 E.	1.0 Flood 3.0 Ebb
	4	Buoy on the Knolls	S. 21 W. N. 61 E.	1.2 1.3	S. 67 W. S. 81 E.	1.3 1.8	S. 78 W. S. 52 E.	1.8 1.8	S. 89 W. S. 39 E.	1.0 Flood 1.3 Ebb
	5	West Entrance of the Swash	South. N. 81 E.	2.0 1.0	S. 21 W. S. 66 E.	2.0 1.4	N. 41 W. S. 40 E.	2.0 1.4	N. 51 W. S. 24 E.	1.5 Flood 1.0 Ebb
	6	Middle of the Swash	N. 55 W. S. 70 E.	1.7 2.1	N. 55 W. S. 60 E	1.7 2.1	N. 55 W. S. 57 E.	1.4 1.0	N. 55 W. S. 57 E.	1.7 Flood 1.0 Ebb
	7	½ mile E. of buoy on West Bank	S. 9 W. N. 45 E.	1 8 1 0	N. 81 W N. 77 E.	1.8 2.4	N. 23 W. S. 34½ E.	1.8 2.0	N. 15 W S. 16½ E.	1.0 Flood 1 0 Ebb
	8	1 mile W. of west end of Coney Island	S. 72 W. N. 16 E.	0.8 1.6	N. 22½ W. S. 15 E.	0 8 2 0	N. 26 W. S. 15 E.	1.4 2.5	N. 40 W. S. 15 E.	1.4 Flood 2.0 Ebb
	9	Chan. betwn. Bedloe's Isld & Robin's Reef	N. 59 E. S. 73 W.	1.0 1.0	N. 47 E. S. 44½ W.	1.8 2.4	N. 35½ E S. 44½ W.	1.4 3.0	N. 35½ E. S. 44½ W.	1.2 Flood 3.0 Ebb
	10	Off the Buttermilk Channel	East. N. 88½ W.	1.0 1.0	N. 47 E. S. 65 W.	2.0 2.4	N. 41½ E. S. 47½ W.	1.5 3.0	N. 47 E. S. 47½ W.	1.2 Flood 3.0 Ebb
	11	At junction of North and East Rivers	N. 81½ E. S. 68 W.	1.0 1.6	N. 24½ E. S. 42½ W.	1.8 2.4	N. 15 E. 1.8 S. 16 W. 2.4		N. 15 E. S. 16 W.	1.0 Flood 1.5 Ebb
	12	In the East River	N. 68 E. S. 56 W.	2.0 1.2	N. 68 E. S. 56 W.	3 0 3.7	N. 68 E. S. 56 W.	2.0 2.7	N. 68 E. S. 56 W.	1.6 Flood 2.0 Ebb
Class 3rd.	1	In False Hook Channel	N. 39 W. S. 36½ E.	1.5 1.5	N. 23 W. S. 21 E.	2 0 1.5	N. 17 W. S. 25 E.	2.0 2.4	N. 17 W. S. 25 E.	1.0 Flood 1.5 Ebb
	2	At the W. entrance of East Channel	N. 78½ W. S. 87 E.	0 6 0.7	N. 65 W. S. 72½ E.	1.8 1.5	N. 51 W. S. 58 E.	1·8 2·3	North S. 43 E.	1.6 Flood 1.0 Ebb
	3	Middle of the East Channel	N. 11 E. N. 80 E.	0.9 1.0	N. 10½ W. S. 75 E.	1.5 2.2	N. 30 W. S. 75 E.	1.4 2.8	N. 49 W. S. 75 E.	0.9 Flood 1.0 Ebb

NEW YORK HARBOUR TO THE FLORIDA REEF.

To the southward of Sandy Hook, and having passed the Highlands of Navesink, the hilly land is gradually succeeded by a low level coast, which again gives place to a forest and woody flat. This part of the sea coast may be known by its swampy appearance, appearing like broken islands at a short distance off the shore. In the day time you may approach to within 2 leagues of the coast, but during the night it is advisable to keep further off.

If sailing in the night time from New York Harbour to the southward, and you are to the eastward of the bar, you may steer South till you are abreast of Barnigat Inlet. Between these places you can approach to within half a mile of the shore, should the wind not be on shore. The soundings all along are pretty regular.

Barnigat Inlet has been described in a previous page. On the southern side of the entrance is a fixed light at 40 feet, visible 14 miles. Squam Inlet can only be navigated by small vessels, and there is generally a sandy bar at the entrance of each inlet.

LITTLE EGG HARBOUR, *or Port Tuckerton*, lies about 20 miles to the southward of Barnigat, and is a harbour not very accessible to large vessels, as the shoals about the entrance render it dangerous to approach for a vessel drawing over 10 or 12 feet. It has, however, been occasionally used in cases of emergency, but cannot be much recommended.

The entrance of Little Egg Harbour is barred by shoals through which there are three channels, named the Sod, Middle, and South Channels, of which the Sod is considered the best, and lies in a S.W. direction. The Middle Channel lies in a W.N.W. direction, and is barred by an 8 feet shoal, while the South Channel trends in a northerly direction, and has a depth of 11 to 12 feet water, deepening to 5 and 6 fathoms as you approach Tucker's Island.

The entrance of Little Egg Harbour is now marked by a lighthouse, painted red, and 45 feet high, which shows a fixed red light visible about 14 miles. The building is about 220 yards in a southerly direction from the old boarding-house (now destroyed), and bears S.W. by W., about 18 miles, from Barnigat Light. Vessels making this light should not steer to the northward of N.E., until Barnigat Light is made, which is the more necessary as the land of Barnigat runs nearly in a N. by E. direction, and as the lights are both of the same character, the Tucker's Beach Light would probably occasion one unacquainted to haul to the northward too soon.

The Sod Channel is now buoyed, and care must be taken in running in, as the channel is but narrow, and has a depth of 14 to 10 feet at low water. The following instructions for running in are by Lieut. G. M. Bache, of the U. S. Navy, who surveyed the entrance in 1840:—

"*Sod Channel.*—Coasters bound to the northward will generally make this harbour, when caught by a north-easter, after having passed to the northward of it, and before being able to make Sandy Hook. In running down within sight of the land, pass the boarding-house near the point of Long Beach, giving the breakers off the Old Inlet a berth of half a mile, and keeping in 24 feet water until the boarding-house on Tucker's Island bears N.W. by W. The boarding-house on Tucker's Island is distinguished from that on Long Beach by having three small trees close to the northward of it, and a thick undergrowth on the hillocks on the northern extremity of the island; whereas, the sand hills in the neighbourhood of the boarding-house on Long Beach are bare.

"Being in 24 feet water, fine black sand, with the boarding-house on Tucker's Island bearing N.W. by W., steer W. by S. for the outer buoy near the middle of the entrance of Sod Channel.

"While abreast of Tucker's Island, and before reaching the outer buoy, there will not be much tide, and the least depth will be 10 feet at low water. When up with the outer buoy, the S.W. point of Tucker's Island being 900 feet distant to the westward, steer S.W. $\frac{1}{2}$ S. for the middle buoy, keeping on the outside. Strong tides will here be met: the flood setting over the shoal off Sod Point, and the ebb setting over towards the Round Shoal, for which allowance must be made. Turn the middle buoy in 19 feet water, and steer for the inner buoy. With a scant wind and ebb tide vessels will be obliged to anchor here, or even before reaching this point. With a change of tide a better anchorage will be found further up, between Anchoring Island and the marsh to the northward. This part of the harbour, from the N.W. extremity of Anchoring Island to Hatfield's Store is $1\frac{1}{4}$ mile long, and a quarter of a mile wide.

"Vessels coming from the southward and wishing to enter by the Sod Channel, will bring the boarding-house on Tucker's Island to bear N. $\frac{1}{2}$ W., and steer for it, giving the Round Shoal a berth. When the hillock on the south end of the island bears W. $\frac{1}{2}$ N. haul up W. by S. for the outer buoy, and afterwards follow the directions given above.

"*South Channel.*—Vessels from the southward will give the Brigantine Shoals (having only 10 feet on them) a good berth, keeping in 4 fathoms water until the north-

ernmost house on Brigantine Beach bears N.W. by N., then steer N. by W. $\frac{3}{4}$ W. if the weather be clear. Hatfield's Store on the marsh will be seen a-head $4\frac{1}{2}$ miles distant. Keep on this course until the northern house on Brigantine Beach bears N.W. by W. $\frac{1}{4}$ W., when they will be within the breakers on the south point of the Round Shoal and those off the beach; then haul up to N.E. $\frac{3}{4}$ N. and continue on that course for three-quarters of a mile, until the northern house on Brigantine Beach bears West, and the S.E. point of the sand hillock on the south end of Tucker's Island bears N. $\frac{3}{4}$ W., haul in then N. $\frac{3}{4}$ W. and steer for this hillock until nearly up with the middle buoy, after which proceed as above directed."

It is high water, on the full and change days, at Little Egg Harbour (corrected establishment), at ..... 7h. 10m.
Height of mean high water, above the plane of reference .... 4ft. 3in.
Main rise and fall of tides..... 4ft. 0in.

The plane of reference is the lowest water observed.

Latitude of the north end of Tucker's Island 39° 30′ 46″ N., longitude 74° 17′ 36″ W. The variation of the compass, determined in November, 1846, 4° 24′ W.

ABSECUM INLET is at the distance of 6 miles, S.W., from Little Egg Harbour, and is frequented principally by coasters. Off the inlet, from E. to E. by S., 3 miles, is a shoal having in some places not more than 10 feet. Another shoal is said to lie near this, distant about one mile.

In entering, you should bring the house which is on the starboard hand point to bear N.W., and steer for it, until within one-fourth of a mile from the house, when you must steer North till you get to the marsh, where you may anchor in from 3 to 6 fathoms. The depth of water on the bar at low tide is 9 feet. The usual rise of tide is 5 feet.

GREAT EGG HARBOUR lies about 17 miles, S.W., from Little Egg Harbour. Its entrance is shoal, and a shoal bank is off its south side, at about a league from shore, which has not more than 6 feet on it. When abreast of this place in 5 or 6 fathoms, the ground is white and black sand, mingled with broken shells. The land in this part may be known from its appearing like broken islands, and more particularly so by the Great and Little Swamps, the latter of which swamps is directly within Barnigat Inlet, and appears to be at some little distance in the country, and about 4 miles long. Great Swamp is directly in the rear of Great Egg Harbour, and is of greater extent than the former, being about 10 miles long. Great Swamp is considerably higher than Little Swamp. Having passed Great Egg Harbour, a S.W. $\frac{1}{2}$ W. course, for $9\frac{1}{2}$ leagues, will bring you up with Cape May.

All along this coast, from the entrance of New York to that of the Delaware, the soundings are regular; at the distance of 2 leagues from the shore you will have from 8 to 10 fathoms, until off Great Egg Harbour; and thence to Cape May are from 5 to 7 fathoms.

The Great and Little Egg Harbours will admit, at high water, vessels drawing 12 feet; but they ought only to be run for when no other port can be made, the navigation not being perfectly safe. In sailing between Great Egg Harbour and Cape May, on the course above mentioned, you will pass the inlets named Coston's, Townsend's, Hereford, Turtle Gut, and Cold Spring, each of which has a bar at its entrance. Hereford Gut extends easterly, and enlarges into a small bay, named Leaming's Sound, and the coast between Turtle Gut and Cold Spring Inlet is named the Five-mile Beach; the sea breaks off it.

From off Cold Spring Inlet, which is the last inlet of those previously mentioned, you may steer for Cape May W. by S.; but, if bound to Cape Henlopen, you must thence steer outward S.S.W., until the lighthouse on that cape bears West, when you may run for it, not approaching nearer than 2 miles. Cape May has several houses and a windmill on it, and a large grove of trees to the westward.

RIVER DELAWARE.—The soundings opposite to the entrance of the Delaware are very unequal. In the channel near Cape Henlopen, there are from 14 to 16 fathoms; but at 5 leagues East from the cape there are only 8 to 9 fathoms. The greatest danger to a vessel hereabout is the shoal, named the

Five-fathom, or *Cape May Bank*, the shoalest part of which lies about $15\frac{1}{2}$ miles, E. by S., from the lighthouse on Cape May, and $22\frac{1}{4}$ miles, E. by N. $\frac{1}{4}$ N., from the lighthouse on Cape Henlopen, and in lat. 38° 53′ 30″ N., and long. 74° 38′ 30″ W. This shoalest part is about one mile in extent, and has but 13 to 18 feet water upon it; from thence the bank runs to the N. by W., about $2\frac{1}{4}$ miles, and has soundings over it

of 4 and 4¼ fathoms, 5 fathoms being on its outer edge. Close to this shoal the soundings are steep-to, and particularly off its southern edge, near the 13-feet spot, where at less than one-eighth of a mile off there are 7½ to 8 fathoms. Between the Five-fathom Bank and the shore the soundings are from 7½ to 5 fathoms, decreasing as you approach the land, on a bottom of fine white, grey, and black sand, with specks; but it is not advisable for strangers to run within the bank.

Off the south end of the Five-fathom Bank there is a lightvessel, showing two fixed lights, which is moored in 8 fathoms at low water, with Cape May Lighthouse bearing W.N.W., distant 14 miles, and the shoal part of the bank N.E. by E. ½ E., distant 3 miles. The lights are visible from 7 to 10 miles off.

When steering for the Delaware, it is recommended not to get into less than 12 fathoms water after you have made the land to the northward of Cape Henlopen, nor to get into a higher latitude than 38° 45′, on account of the Five-fathom Bank. But the lightvessel off the southern end of the bank will afford excellent protection against your running into danger, particularly as it bears a bell, which is sounded in foggy weather.

M'Crie's Shoal.—This is a dangerous shoal lying between the Five-fathom Bank and the entrance of the Delaware, upon which there are but 17 and 18 feet water. It is about a mile in extent, and lies with Cape May Lighthouse bearing N.W. ½ N., distant 7 miles. Close-to all round this shoal are 3½ to 6 fathoms, on a bottom of fine grey sand and black specks.

About 1½ mile, W. by N., from M'Crie's Shoal there is a small patch of 18 feet water, the soundings between being 3½ to 4 fathoms water; and a bank of 4½ fathoms has also been found outside the entrance of the river, from which the lighthouse on Cape Henlopen bore W.N.W., distant 15 miles; close to it, on either side, were 8 to 12 fathoms water.

CAPE MAY.—The lighthouse on this cape stands in lat. 38° 55′ 48″ N., and long. 74° 57′ 57″ W., and is 74 feet high, and shows a light, at 80 feet, which revolves every 3 minutes, and is visible 14 miles. At about 1¾ mile to the eastward of the lighthouse there is a small village; and in the rear of the building the country is well wooded.

To the southward of the cape the entrance of the river is obstructed for a distance of about 6 miles, by numerous shoals, named the Overfalls, upon which there are generally 12 to 17 feet, and occasionally much less, there being in some places only 3 and 6 feet water. Among these shoals there are some narrow navigable channels, suitable only for the coasters, as they are too intricate to be run for by any but those who are well acquainted. The channel within, immediately round the cape, is named the Cape May Channel, and in it there are from 4½ to 5 fathoms water; but it is narrow and confined by the shoals. The ship channel, which is used by the large traders, is the best passage into the river, as it is about 4 miles wide, and has a general depth of 9 to 12 and 15 fathoms, fine yellow and white sand, with black specks and shells. This channel lies to the westward of the shoals, between them and Cape Henlopen, and in running in there is little or no danger if the lead is kept properly going.*

The southern edge of the Overfalls lies N.E. ¼ E., 6¼ miles, from the lighthouse on Cape Henlopen, and thence they extend to within a mile of Cape May, from the lighthouse on which their southern edge bears S. by W. ¼ W., 5½ miles. In many places there are breakers and tide-rips, hence the name "The Overfalls." These shoals are in general steep-to, with 4 to 5 fathoms close off their edges.

CAPE HENLOPEN is on the western side of the entrance to the River Delaware, and has a lighthouse upon it 72 feet high, which shows a fixed light at 160 feet above the level of the sea, visible 18 miles. The position of the lighthouse is lat. 38° 46′ 36″ N., and long. 75° 5′ 25″ W.

* The following notice was issued in March, 1823, and should be attended to by all vessels approaching the Delaware from seaward:—

"The risk of coming into this river will be much lessened if the commanders of ships would put a signal for a pilot as soon as they can discover either of the lighthouses; for the Chamber of Commerce and the Insurance Offices have established repeating signals at the lighthouses, upon seeing which, the pilots will always attend and meet the vessels about the lighthouses. But when the signal is not hoisted until you get abreast of the lighthouse, you will be under the necessity of lying to, which will always occasion delay and sometimes danger. The pilot vessels will generally be found cruising about the entrance of the Delaware, but whenever that is not the case, the above caution may be of some importance."

To the northward of the lighthouse, and at the extreme end of the cape, close to the beach, there is a small beacon which is lighted, and shows a fixed light at 40 feet, visible at about 10 miles. If wishing to anchor in Old Kiln Roads, you must bring this beacon light in one with the lighthouse, approaching the beacon light within a cable's length; then steer W.N.W., until the lighthouse bears S.E., and anchor in 4 fathoms, good holding-ground.

Along the coast of Cape Henlopen to the southward, a shoal, named the Hen and Chicken, extends for a distance of 3 miles from the lighthouse, on some parts of which are but 5 to 12 feet water. In the narrow channel between it and the coast are from 5 to 4 fathoms, and immediately outside of it 9 to 10 fathoms water. In approaching this shoal on the east side, go not nearer to it than 11 or 12 fathoms, and keep the lead going, by which means you will avoid the shoal; or approach the light not nearer than two miles on an East bearing. The southern point of this shoal lies S.E. $\frac{1}{2}$ S., $2\frac{1}{2}$ miles, and the northern point N.N.E., three-quarters of a mile, from the lighthouse.

Immediately round the north end of the cape a breakwater has lately been constructed, to the westward of which there is another pile of masonry, named the Ice Breaker, which has been built for the purpose of protecting the anchorage within the breakwater from the ice, which at certain periods of the year comes down the river in large quantities. On the west end of the principal breakwater is a lighthouse, showing a small fixed light at 56 feet, visible about 12 miles.

Cape May Channel.—If running into the Delaware by Cape May Channel, get the lighthouse to bear W.N.W., distant about $4\frac{3}{4}$ miles, in 4 or 5 fathoms, when you will be outside Eph's Shoal, which is a dangerous bank of about a mile in extent (on which there are only 6 feet water) lying S.E. $\frac{1}{4}$ S., $1\frac{1}{4}$ mile, from Congress Hall, and E.S.E. $\frac{1}{4}$ E., 3 miles, from Cape May Lighthouse: inside of this shoal, between it and the shore, are $3\frac{1}{3}$ and 4 fathoms water, but no safe channel. Run thence along the land in about 5 fathoms, at $1\frac{1}{2}$ mile from the shore, passing outside of Eph's Shoal, and when Congress Hall bears North, bring the buoy off Cape May, No. 1., a-head, and steer for it W. by N. $\frac{1}{2}$ N., and leave it close on the starboard hand when passing. You will now be at the entrance of Ricord's Channel, a narrow gatway of 15 to 18 feet water, lying between the Crow and Mummy Shoals; which shoals have but from 6 to 8 feet water on them, and are dangerous. Ricord's Channel is buoyed, and to steer through it from the buoy No. 1, just off the lighthouse, steer N.W. $\frac{3}{4}$ W. for buoy No. 4, lying on the southern spit of Crow Shoal, and leave it on the starboard hand at a short distance; then steer N.N.W. westerly for buoy No. 5, lying in the middle of the channel, which pass on either hand, and haul up N.W. $\frac{1}{2}$ W. westerly for the buoy No. 6, at the western entrance of the channel, which you may also pass on either hand. You may steer now W. $\frac{1}{2}$ N., and enter the main channel between the buoy of the Brown Shoal, and the lightvessel off the Brandywine Shoal.

If your vessel should be small, you may, instead of running through Ricord's Channel, cross the flats, at about $4\frac{3}{4}$ miles to the northward of the cape. To do this, after passing the buoy No. 1, on the starboard hand, haul along the land North, until abreast of Town Bank, which is a place on the shore at about 3 miles from the lighthouse, thence steer N.W. by W. $\frac{1}{2}$ W. on the flood, and N.W. $\frac{1}{2}$ W. on the ebb, which will carry you across the flats in 9 feet water, and bring you out near the lightvessel No. 2, in the main ship channel.

Should you be in the Cape May Channel and wish to run into the anchorage between the breakwater and Cape Henlopen, steer from the buoy, No. 1 W. $\frac{3}{4}$ N., to the buoy No. 3, lying on the south-east spit of the Mummy Shoal, keeping it open on the port bow a point, and gradually hauling up for it. When abreast of this buoy leave it on the starboard hand, and steer S.W. by S. for the buoy No. 2, lying on the southern edge of the East-north-east or Round Shoal, which leave close on board on the starboard hand. You will now be in the Through Channel, in which are 15 to 18 feet water, and may steer on S.W. by S. for the breakwater.

To run into the anchorage between the breakwater and the shore, from the *southward*, pass the Hen and Chicken Shoal at the distance of about 2 miles from the shore, then haul in close to the shore, keeping as close as convenient to Cape Henlopen, as it is steep-to, there being from 9 to 10 fathoms immediately off it; thence you may steer to the anchorage. If from the *eastward*, bring Cape Henlopen Lighthouse to bear W. by S. and stand in. The harbour may be entered at either end, or between the breakwater and ice-breaker, according to the wind and tide, and to the berth selected. Do not anchor in the Gat. The best anchorage is close to the main-work, with the

breakwater lighthouse bearing N. by W. The holding-ground is good in every part of the harbour, and there is no difficulty in running for it in a gale of wind.

THE BANKS, &c.—Within the entrance of the river there are various banks, the principal of which are the following. Inside these shoals there are extensive flats which join the shores, and have on them generally from 8 to 10 feet water.

The Shears.—This is the extremity of a sandy flat which joins the shore immediately to the north-westward of Cape Henlopen. Upon it are from 6 to 12 feet water, and its eastern extremity is marked by a buoy. This eastern extremity lies N. by W. $\frac{3}{4}$ W., 3 miles, from Cape Henlopen Lighthouse. Close to the western side of this shoal are 5 to 7 fathoms water.

Brown Shoal.—The southern edge of this shoal, on which is a buoy, lies W. by N., $7\frac{1}{4}$ miles, from the lighthouse on Cape May, and N. $\frac{3}{4}$ W., $9\frac{1}{2}$ miles, from Cape Henlopen Lighthouse. It is about $1\frac{1}{2}$ mile long in a N.N.W. direction, and has from 8 to 14 feet on it, the shoalest part being in the centre. Close-to all round are 6 to 7 fathoms.

Brandywine Shoal.—The southern edge of this shoal lies about W.N.W. $\frac{1}{4}$ W., 7 miles, from Cape May Lighthouse, and thence it extends $3\frac{1}{2}$ miles in a N.N.W. direction. Upon it there are from 1 to 16 feet; the shoalest part, near the middle, being so shallow, as to become nearly dry at very low tides. This shoal is very narrow, and has steep sides; there being immediately off it, on the west side, from 5 to 7 fathoms.

Near the north extremity of the Brandywine Shoal there is a buoy; and a light-vessel, bearing two fixed lights, is moored in 7 fathoms, a short distance to the westward of the south point of the shoal.* This lightvessel is the first met with on entering the river, and is numbered No. 1. An iron lighthouse has also been erected near the south extremity of the shoal which bears from Cape May Lighthouse, N.W. by W. $\frac{1}{2}$ W., 8 miles, and from Cape Henlopen N. $\frac{1}{4}$ W., $12\frac{1}{3}$ miles. The light is fixed at 50 feet, and can be seen about 15 miles off.

At the lighthouse on Brandywine Shoal there is a bell weighing 500 lbs, which, during foggy or thick weather, is struck by machinery as follows:—Seven strokes at intervals of five seconds, followed by a pause of equal duration, or of half a minute; then again seven strokes and the same pause as before, and so on.

At about 3 miles, W. $\frac{1}{2}$ S., from the Brandywine Lightvessel is the extremity of a narrow sand of 6 to 8 feet water, hard ground, which thence runs to the N.N.W., and joins the flats running off from the western shore of the Delaware. These flats have generally 8 to 10 feet water upon them but on some places are shallow patches of less than 6 feet. The Joe Flogger Sand lies along the edge of these flats, and form with with them a narrow channel, named Blake's Channel.

'Miah Maull.—This is a small shoal, about $1\frac{3}{4}$ mile in extent, lying to the N.N.W., about 6 miles, of the Brandywine Lightvessel, and S.W. by S., about $4\frac{1}{2}$ miles, from Egg Island Lighthouse. Upon this shoal there are from 11 to 16 feet, and 4 to 5 fathoms close to its edges. Upon the western edge of this shoal is a buoy.

On the eastern side of the 'Miah Maull Shoal there are extensive flats of 6 to 10 feet water which run to the shore of Egg Island Point, and fill the bay formed between that point and Cape May. On these flats there are many patches of 2 to 4 feet water, which take the name of Dead Man's, Fishing Creek, and Crow Shoals. This latter shoal has an extent of about 4 miles in a north and south direction, lying nearly parallel to the shore; the least water on it is 7 feet, and its south point lies W. $\frac{1}{2}$ N., $1\frac{1}{2}$ mile, from Cape May Lighthouse.

Cross Ledge.—This is a narrow shoal, $4\frac{1}{4}$ miles long, the southern edge of which lies about $2\frac{3}{4}$ miles, N.W. by N., from 'Miah Maull Shoal, and W. by S. $\frac{1}{2}$ S., $4\frac{1}{2}$ miles, from Egg Island Lighthouse. It is so shallow as to become dry on some parts, and has from 3 to 5 fathoms close to its western edge. Its eastern edge borders the flats which run off the eastern shore; hence the channel up the river is on its western side between it and the Joe Flogger Sand, the eastern edge of which is distant $1\frac{1}{3}$ mile from it.

On the southern edge of the Cross Ledge there is a buoy, and near its northern extremity, in the middle of the channel between it and the Joe Flogger Sand, there is another buoy, named the Buoy of the Middle, from the shoal upon which it was placed

* This lightvessel is moored in 5 fathoms, with Cape Henlopen Lighthouse bearing S. by E., distant 12 miles, and Cape May Light E.S.E., distant about 8 miles, and you must on no account pass between it and the shore. The vessel remains only from the 10th of March to the 10th of September.

but which has now disappeared. A lightvessel, numbered No. 2, is also placed in the middle of the channel, a little to the southward of the buoy on the south edge of the shoal.

From the north end of the Cross Ledge extensive flats, of about 9 to 10 feet water, border the eastern shore to the distance of about 2 miles, and run along the shore all the way to Philadelphia.

Joe Flogger Sand.—This sand has been previously mentioned as bordering the flats on the western side of the river for a considerable distance. Its southern end is about 4 miles to the N.W. $\frac{1}{2}$ N. of the Brandywine Lightvessel; hence it extends about 15 miles, in a N.N.W. $\frac{3}{4}$ W. direction, and is in no part more than half a mile wide. Its general depth is from 6 to 10 feet, but in some places there is much less water, as it becomes nearly dry at low tides. On the southern end of the shoal there is a buoy, and at $1\frac{1}{2}$ mile to the south-west of this there is another, named the Buoy of the Fourteen-feet Bank, from the shoal which it used to mark, but which has now disappeared.

The channel between the Joe Flogger Sand and the flats of the western shore is named Blake's Channel, from the gentleman who discovered and surveyed it. It is about half a mile wide, and has an average depth of $3\frac{1}{2}$ fathoms, excepting in one spot, $1\frac{1}{2}$ mile long, where there are only 13 feet water. This channel is buoyed on either side, and although not so wide as the main ship channel, still it may occasionally be found convenient, as it is a direct channel, and may be navigated with ordinary prudence.

From Blake's Channel the shores of the Delaware, on either side, are bordered by sandy and mud flats: but it would be useless to carry on our description farther, as no adequate knowledge of them can be acquired without a reference to the chart.

Lights.—Besides the lights on Cape May and Cape Henlopen, and the lightvessels of the Brandywine Shoal and Cross Ledge, there are the following lights:—

On the eastern side.—A fixed light on a dwelling house erected on Egg Island Point, which is 40 feet high, and can be seen 12 miles. A fixed light upon a dwelling house erected on the west side of Cohansey Creek; this is also 40 feet high, and can be seen 12 miles.

On the western side.—A fixed light on a dwelling house at Mispillion Creek. A fixed light on a dwelling house at Mahon's Ditch. A fixed light at 40 feet on a dwelling house at Bombay Hook. A fixed light at 55 feet on Reedy Island and another fixed light at Christiana River, about 4 miles above Newcastle, leading up to Wilmington.

DIRECTIONS.—In making the river from the eastward by the main ship-channel, bring the lightvessel of the Five-fathom Bank to bear North, distant one mile, and steer W. by S. towards the lighthouse on Cape Henlopen. You will meet with soundings varying from 7 to 9 fathoms on this course, and when they deepen to 10 fathoms or more, the lighthouse will be distant about $3\frac{1}{2}$ miles. Steer now north-west, in order to bring the beacon on the cape and the lighthouse in range, being careful at the same time, particularly in light winds and with a flood tide, which sets to the westward, not to cross much to the westward of the range, on account of the near proximity of the Shears Shoal, the eastern edge of which has been previously mentioned as being steep-to. Steer up the river with this mark on (the lighthouse and beacon in range), and it will carry you in soundings shoaling from 8 to 15 fathoms to the eastward of the buoy of the Brown Shoal, until the lightvessel No. 1, near the Brandywine Shoal, bears N.N.W., when you may steer for it, passing to the westward of it as near as possible.

From the Brandywine Lightvessel No. 1. to the lightvessel No. 2, near the Cross Ledge, the course of the flood tide is N.W. by N. $\frac{1}{2}$ N., and on the ebb N.N.W., a distance of $11\frac{1}{4}$ miles, in soundings bearing from $4\frac{1}{2}$ to 8 fathoms; in this course you will pass between the buoy on the north end of the Brandywine and the buoy on the Fourteen-feet Bank, the former of which is $1\frac{3}{4}$ mile, and the latter 5 miles, from the lightvessel on the Brandywine. It should be mentioned that the tides are influenced very much in direction and strength by the winds; but as the channel is well defined by the two lightvessels (which are moored in line with it) in connection with the buoys, there can be no difficulty in clear weather. In beating up do not stand to the westward into less than 4 fathoms. In thick weather the Joe Flogger may be safely tracked along its whole extent, hauling on to 4 fathoms, hard, and deepening off to 5 and 6 fathoms, soft, bottom.

Leaving the Cross Lightvessel to the westward close aboard, your course then to the Middle is N.W. by N. $\frac{1}{2}$ N. on the flood, and N.N.W. on the ebb tide, distance 5 miles, in soundings of from $7\frac{1}{2}$ to 5 fathoms. These courses carry you about mid-channel between Joe Flogger and Cross Ledge. From the buoy of the Middle to Bombay Hook Bar, the Thrum Cap (the lower of two small insulated clumps of trees on the western shore) bearing S.W., the course is N.W. $\frac{1}{2}$ W. on the flood, and N.W. by N. on the ebb, distance $7\frac{1}{2}$ miles. Soundings from 5 to $6\frac{1}{2}$ fathoms. Bombay Hook Bar is very bold; the soundings in the channel off it are from 6 to $6\frac{1}{2}$ fathoms, and it should not be approached nearer than 5 fathoms.

When nearly up with the northern end of Joe Flogger, Bombay Hook Light will be made just open with Bombay Hook Point, and bearing N.W. When up with Bombay Hook Point, Reedy Light will be made, bearing N.W. by N.

The Upper Middle Sand on the port side of the channel has a buoy on its south end. Thence the sand extends 5 miles, having 4 and $4\frac{1}{2}$ fathoms on its west side, soft ground: to the eastward the water is deeper, but the ground is hard. From Bombay Hook Bar to Liston's (the tree bearing south), the course is N.W. $\frac{1}{2}$ N., distance 13 miles; soundings, as far as Bombay Hook Light, 6 to $4\frac{1}{2}$ fathoms; and between the light and Liston's $3\frac{1}{2}$ to $3\frac{1}{4}$ fathoms, being the least water in any part of the channel between Cape Henlopen and the Pea Patch.

From Liston's (the tree bearing South, to give Stony Point Bar a berth,) steer for Port Penn Piers, a little to the westward of Reedy Island Light, $1\frac{1}{2}$ mile, or until Barney's house, on the Delaware shore, (yellow, with two single poplars near it,) bears S.W. by W., soundings 4 fathoms; then your course is N. by E. $\frac{1}{4}$ E., 4 miles to Salem, or Elsingborough Point, on the Jersey shore; soundings, up to the middle of Reedy Island, 4 to 5 fathoms, then deepening to 7 and 8 fathoms. There are two channels to pass the Pea Patch; for the eastern, or Goose Island Channel, track the Salem flats along, which commence at Elsingborough Point, hauling on and off, shoaling to $3\frac{1}{2}$, and deepening to 5 and 6 fathoms.

When up with the north end of the Pea Patch, take your soundings from the New Jersey shore, hauling on to the flats to 3, and deepening to 4 fathoms, tracking the flat along until Newcastle spire bears N. $\frac{1}{2}$ E., when you are clear of the north-eastern end of Bulkhead Shoal, and may haul out into the middle of the river.

The channel westward of the Pea Patch is divided by a middle ground, commencing about mid-way between the Pea Patch and Delaware shore, and following the bend of the river, the least water on it is 10 feet. The channel westward of this middle is narrow, least water 20 feet. To take it, run from Elsingborough Point for the Pea Patch until up with Ready Point, from which the shore trends suddenly to the N.W., then track the flats on the Delaware shore along, passing between the East and West Buoys, and near the West Buoy, up to the Hamburg Buoy.

The channel east of the middle is not so difficult, least water 13 feet. When up with Reedy Point, take your soundings from the Pea Patch side, and track the flats along up to the East Buoy, and then the middle to the Hamburg Buoy.

From Newcastle to Marcus Hook the general course of the river is N.E. by N., $11\frac{1}{2}$ miles. The best water is off the eastern shore, until past Cherry Island Flats (a middle ground off Christiana Creek), of about $2\frac{1}{2}$ miles long, having on them 11 feet, least water. Having passed the flats, the best water is off the western shore; keeping it pretty well aboard, you clear Marcus Hook Bar, which lies off that place.

From Marcus Hook to Chester, the course is about N.E. by E., $3\frac{1}{4}$ miles; best water off the western shore. When one mile above Chester, you are up with the buoy on the spit which makes down the river from Tinicum Island, which you leave to the westward. The trend of the river is then nearly east of the bar, below Fort Miffin, upon which there are two buoys.

Cross the bar between the two buoys, and steer for Fort Miffin, passing to the northward of the old pier, which lies off that work. The river then trends eastward again up to the Horse-shoe, upon which there is a buoy, which is to be left to the northward.

Having passed the Horse-shoe, the trend of the river is nearly north up to Kaighn's Point, the best water on the eastern shore, until the Canal Basin on the Pennsylvania side bears W. by N. Steer across the river, and keep the western shore aboard up to the city.

Blake's Channel.—This is the channel which has been previously mentioned as lying between the Joe Flagger Sand and the flats off the western shore. It has lately been

buoyed throughout, and as it is frequently taken by mistake for the main channel by vessels sailing up the Delaware, we give the following directions for navigating it; but it should be observed that they were written before the channel was buoyed.

Blake's Channel, although not so wide, is as direct as the main channel. The southern extremity of Joe Flogger's Sand bears N.W. by N., $1\frac{1}{7}$ mile, from the buoy on Fourteen-feet Bank. Entering with that buoy bearing East, $1\frac{1}{2}$ mile, steer N.W. by N. $\frac{1}{2}$ N., which course will carry you along the western side of the shoal in not less than 4 fathoms, until Mahon Light bears W. by N., when you strike a middle ground, $1\frac{1}{2}$ mile long, (least water 13 feet), and having passed it you drop into 4 fathoms again. When the Buoy of the Middle (main channel) bears E. by N. $\frac{1}{2}$ N., and Mahon Light W. by S. $\frac{1}{2}$ S., steer N.W. by N. $\frac{1}{2}$ N., and you pass through into the main channel, a little below the Thrum Cap, and in not less than $3\frac{1}{4}$ fathoms.

The following directions will also serve for this channel, and with a head tide more safely than the foregoing. Entering as before directed, track the west side of the channel along, shoaling to $3\frac{1}{2}$, and deepening to 4 and 5 fathoms, until Mahon Light bears W.N.W., when you take your soundings from Joe Flogger cautiously, (not shoaling to less than 3 fathoms, for the shoal is very bold) and carry $3\frac{1}{2}$ to $4\frac{1}{2}$ fathoms through, between it and the middle ground. When past the middle ground, track the west side of the channel along as before.

Dona River.—This is a small river between Mahon Light and Bombay Hook Point, at the entrance to which are from 9 to 10 feet water. To make this river, stand in for Deep Water Point until within one-third of a mile of the shore, then haul up for the entrance of Dona River, giving the port shore at the entrance a berth, and keeping the starboard or northern shore aboard until approaching the point near Dona Landing; then keep in mid-channel up to the wharf at Dona Landing. In crossing the Joe Flogger, from the main or Blake's Channel, keep the red buoy about a cable's length to the southward.

On leaving this river, keep the port or northern shore aboard until abreast of the south point of Little Bombay Hook; then steer E.S.E. until the eastward edge of Little Bombay Hook and Goose Point are in range; then steer S.S.E. $\frac{1}{2}$ E., and when abreast of Deep Water Point, steer N.E. by E. for the red buoy westward of the Joe Flogger, if bound to the North; if bound to the South, steer E. $\frac{1}{2}$ N., crossing the Joe Flogger, and keeping the Buoy of the Middle on the starboard bow.

Reedy Island.—Within Reedy Island there is excellent anchorage in $3\frac{1}{2}$ to 4 fathoms water, which is much used, particularly in the winter season, when there is ice in the river. From the south end of the island a spit runs off about half a mile to the southward, being clear of which your course to the anchorage is North, over a flat of 14 to 17 feet. When within the island, anchor off the piers of Port Penn in 4 to 6 fathoms, muddy bottom.

Bombay Hook.—Off Bombay Hook there is good anchorage, which is much used by vessels waiting wind or tide. Bring Bombay Hook Point to bear S. by E., and the lighthouse W. by N., and anchor in 3 to 4 fathoms, sticky bottom.

PHILADELPHIA.—The City of Philadelphia is situated on a plain, between the Rivers Delaware and Schuylkill, extending about five miles north and south along the former, and two miles east and west, being built on a very regular plan, with spacious streets crossing each other at right angles, which are lined with good houses, mostly built of red brick, and planted with rows of trees. Though 100 miles from the sea, it has not only all the advantages of a maritime station, but also those of a double port; for the Schuylkill is accessible to vessels of 300 tons, while the Delaware, which is here one mile wide, admits the largest merchant vessels to the doors of the warehouses, and is at once spacious and secure. The population, in 1830, amounted to 167,836; in the year 1840, 220,423. The manufactures are various and extensive, and the foreign commerce is considerable, though inferior to that of New York; but the inland and coasting trade is extensive, and is rapidly increasing. The city is noted for the number and excellence of its benevolent and literary institutions; and among its public buildings may be mentioned the old State House, in which the declaration of independence was signed in 1776; the United States Bank; the Pensylvania Bank; the United States Mint; and Girard College, founded on the bequest of M. Girard, a banker in the city, who left his fortune of £1,500,000 for the purpose of educating orphan children. Phila-

delphia was founded by William Penn in 1682, who gave it its present Quaker-like name, which means brotherly love.

TIDAL OBSERVATIONS.—At the entrance of the river, at the Delaware Breakwater, the following observations were made by the surveyors, which are the mean of 456 tides observed during the years from 1840 to 1847:—

High water, Corrected Establishment	8h.
Rise of highest tide, above the place of reference	6.3 feet.
Fall of lowest tide below the place of reference	1.0
Height of mean high water above ditto	3.8
Height of mean low water above ditto	0.3
Mean rise and fall of tides	3.5
Mean rise and fall of spring tides	4.5
Mean rise and fall of neap tides	3.0
Mean duration of rise, { from the middle of one stand }	6h. 15m.
Mean duration of full, { to the middle of the next, }	6h. 06m.
Mean duration of stand	0h. 26m.

THE COAST SOUTHWARD.—From the River Delaware the coast runs to the S.S.W., about 110 miles, to Cape Charles, at the entrance of the Chesapeake. Along this coast several small shallow patches lie off the land and at various distances; the first of which, named the Hen and Chicken, immediately south of Cape Henlopen, has been previously mentioned. To the S.E., easterly of the cape, about 6½ miles, is said to be a shoal of 3 fathoms, named the Cap, and another at 11 miles, S.S.E ½ E., from the cape, named the Indian River Shoal, on which there is the same depth of water. In lat. 38° 27′ 30″ N. and long. 74° 56′ 09″ W., there is a shoal, about 2 miles long, in a S.W. and N.E. direction, named Fenwick's Island Shoal, on which the least water is 2½ fathoms; it bears S.E. by S., 11 miles, from Indian River Inlet, and E. 7° N. from the north end of Fenwick's Island. On the seaward side of this shoal the soundings change suddenly from 10 to 2½ fathoms, and there are 10 fathoms at about 2 miles to the westward of it. The Fenwick's Island Shoal is about 5 miles from the land, and appears to be extending on the west side and towards the north.

At about 1½ mile to the southward of Fenwick's Island Shoal, there is a small patch of 3½ fathoms, and at nearly 2 miles farther to the southward there is a bank of about one mile in extent, named the Isle of Wight Shoal, upon which are 3 fathoms. This shoal lies about 6½ miles from the shore with the Isle of Wight, woods bearing West, and has on either side of it 10 fathoms within the distance of a mile.

In lat. 38° 17′ and long. 75° 4′, and at about 1¾ mile from the shore, is situated a narrow bank, 2 miles long, of 12 to 17 feet water, named the Little Gull Bank, which has from 5 to 8 fathoms immediately on its edges; and at 2½ miles to the southward of this, but separated from it by soundings of 7½ to 10 fathoms water, is another small patch of 3½ fathoms, named the Great Gull Bank. Besides these shoals there are others more to the southward, of which we have no very accurate description; the principle of these are the Sinepuxent Shoals, of two fathoms, which are represented to lie in about lat. 38° 13′, between the Great Gull Bank and the Sinepuxent Inlet, at 3 miles from the shore, and the Skate Bank, of two fathoms, in lat. 38° 3′ N., at 2 or 3 miles from shore.

Within all the banks enumerated above, the coast is a beachy and even shore, forming a lagoon within, named the Sinepuxent Sound; the inlet to which is in about lat. 38° 13′, within the Sinepuxent Shoals, but it is recommended to keep as far off this coast as possible, as it is low, and in consequence difficult to be recognised.

To the southward of the Sinepuxent Shoals are the Chincoteague Shoals, which are clustered around the southern end of Assateague Island, on the S.E. part of which island there is a lighthouse, bearing a fixed light at 50 feet above the level of the sea. These shoals have deep channels between them, but they must be only attempted by the coasters. You will have 12 fathoms water when you are within half a mile of the Fenwick and Chincoteague Shoal and within the latter there is a good anchorage, called by the same name. At 7 miles, E. ¼ N., from the light on Assateague Island, is the Winter Quarter Shoals, of 2 fathoms; inside of which are several shoal spots with channels for small vessels.

From Assateague Island to Cape Charles the land is low, sandy, and marshy, and trends in a S.S.W. ½ W. direction, with several barred inlets. Along all this coast there is no conspicuous land-mark which can be useful to strangers, until you get into about lat. 37° 13′, where is a lighthouse on the north end of Smith's Island, which shows a re-

volving light at 55 feet, visible about 20 miles. The coast is bordered by a number of low sandy islets on which are the houses of a few fishermen who haul their vessels up through the creeks formed by the islands.

REHOBOTH BAY.—This is a narrow lagoon, the entrance to which is about 9 miles to the southward of the lighthouse on Cape Henlopen. It is separated from the ocean by a narrow strip of land, about a quarter of a mile wide, and within it there is anchorage only suitable for vessels drawing 6 feet water.

Fenwick's Island, which gives its name to one of the shoals lying off the shore, lies about 10 miles to the southward of the lighthouse on Cape Henlopen. It is not of great extent, but is rendered conspicuous by a grove of trees growing on it. This island separates Delaware from Maryland.

In sailing along the coast of Delaware and Maryland in the vicinity of Rehoboth Bay and Sinepuxent Sound, you will have 5 to 8 fathoms at the distance of about 3 miles from the coast, and a strong current setting to the southward; but it is recommended to keep at a much greater distance off on account of the shoals previously mentioned, which lie more or less at a distance of 7 to 8 miles from the land.

MATOMKIN HARBOUR.—This is a small harbour about 35 miles before you reach Smith's Island. On the bar there are said to be 12 feet at spring tides, so that it is only suitable for coasters, and the soundings shoal gradually as you approach it, until within a cable's length of it you will have $2\frac{1}{2}$ to 2 fathoms. In running in over the bar, keep the north shore on board and steer S.W. On the port hand, one mile from the bar, give the point a small berth, and round in to the N.W., and anchor in 4 fathoms water. Great caution is necessary when running in. From the bar, up the inlet, the navigation is very dangerous, being filled with oyster-beds.

The inlets on this coast are very dangerous harbours in a gale of wind, but you may ride along the shore with the wind from N.W. to S.W. When the wind blows hard at N.E. or E.N.E., and you are in the vicinity of the Chincoteague Shoals, your only chance of safety is to stand to the southward, for you cannot clear the land to the northward, to go into the Harbour of Chincoteague. When the wind is to the eastward it is generally thick weather on the coast.

After you are to the southward of Chincoteague, steer S.S.W. for the lighthouse on Cape Henry, because that the northern part of the Machapungo Shoals, lies 4 or 5 leagues to the northward of Smith's Island, and the southern part of them comes nearly abreast of the said island. As you approach Smith's Island you will have 13 fathoms, and in some places but 3 or 4 fathoms on a bottom shoaling gradually to the shore. In lat. 37° 30′, and in long. 75° you will have from 26 to 27 fathoms, which will be about 35 miles from the shore. Along this coast is a strong current running to the S.S.W. in the direction of the shore, at the rate of from 2 to $2\frac{1}{2}$ knots an hour.

CHESAPEAKE BAY AND RIVERS.—From the Capes of Virginia, or the Chesapeake, the shore is generally steep, as far as the Wimble Shoals, to the southward, hereafter described. The greatest extent of soundings from shore is to the eastward of Cape Henry; it being, in that part, between 23 and 24 leagues, with various depths. At the distance of about 7 leagues, and in the latitude of the cape, there is a bank of $9\frac{1}{2}$ fathoms, between which and the cape there are 11 and 12 fathoms, and there is the same depth to some distance without it. The bank is of small extent, and there are 14 and 16 fathoms north and south of it. To the eastward the water deepens gradually to 25 fathoms; it then suddenly shoalens to 20, and, again, in like manner, suddenly deepens to the edge of soundings. The ground off Cape Henry is in general coarse sand, with some gravel; but thence to Cape Hatteras it is commonly fine sand, with oaze.

Ships falling in with the land to the northward of the entrance, should not stand inwards to a less depth than 7 fathoms, until they come into the latitude of Smith's Island and Cape Charles, whence they may stand with safety into 5 fathoms. In coming along shore from the southward, 7 fathoms will be a proper depth to keep in, until up with Cape Henry; whence falling into 8 or 9 fathoms, with sticky bottom, you will be in the channel-way.

When you come in towards the land, to the southward of Cape Henry, you will have deeper water than when you are in the latitude thereof, as 21 fathoms, reddish sand, and pretty large: 9 leagues off it there are 35 and 40 fathoms, fine grey sand.

The land is low and sandy; you cannot see it above 7 leagues off. Cape Henry is low, but bluff, with a few trees to the sea side, at a little distance from the water; it is moderately steep-to, excepting that a small shoal stretches about two cables' length from the shore east of the lighthouse, and there is nothing to hinder a ship from pass-

ing into Lynhaven Bay, where there is soft ground, and from 4 to 6 fathoms water. The bank, named the Middle Ground, is about 4 miles from the cape.

When coming in from sea, in the latitude of Cape Henry, you will meet with soundings as above described. You may readily ascertain when in soundings by the muddy colour of the water. In clear weather the land of Cape Henry may be seen from the the depth of 10 or 11 fathoms, regular soundings, which lie 5 or 6 leagues to the southward of the cape; more to the northward, the soundings are irregular and coarser, as above described.

The Middle Ground off Cape Henry now extends more to the southward than formerly; and there are $4\frac{1}{2}$ fathoms, with the lighthouse bearing W. by S., 5 miles. This bearing, therefore, now leads over the tail of the bank; and the safest course in is with the lighthouse W.N.W., or W. by N.

LIGHTHOUSES.—The numerous lights in the Chesapeake tend very much to facilitate the navigation of this arm of the sea; and it may be as well to take a general view of them before we enter on the particular directions.

Cape Henry.—A lighthouse, with fixed light, elevated at 120 feet above the level of the sea, visible 24 miles. There is a house near it for the accommodation of pilots.

Hampton Roads.—A lightvessel on the north side of Willoughby's Bank, exhibiting two lights; to be left on the port side by vessels entering Hampton Roads. It bears from the lighthouse on Cape Henry W.N.W., distant 13 miles.

Old Point Comfort.—A lighthouse, with fixed light, two miles west from the Willoughby lightvessel. Depths of water, in the channel between, 10 to 16 fathoms.

Craney Island Flat, at the mouth of Elizabeth River:—a vessel in 4 fathoms, with a light at her mast-head.

Back River Point.—South side of entrance to Back River, a revolving light, visible 14 miles.

New Point Comfort, the N.E. point of the entrance of Mobjack Bay:—a lighthouse, with fixed light at 50 feet, visible 15 miles. It bears N.N.W. $\frac{1}{2}$ W, $25\frac{1}{2}$ miles, from that on Cape Henry, which line of direction clears the shoals on the west.

Wolftrap Shoals.—A lightvessel bearing two fixed lights, between the York and Rappahannock Rivers.

Bouler Rock.—A lightvessel, bearing a fixed light. This rock is in the Rappahannock River.

Windmill Point, at the entrance of the Rappahannock:—a lightvessel at the extremity of the shoal, nearly 3 miles, S.E., from the nearest shore.

Tangier Sound, on the eastern side of the Chesapeake:—a lightvessel on Little Watt's Island, at the south-eastern extremity of the Sound; and another, a fixed light, on Clay Island, at the northern extremity of the same.

Smith's Point, the southernmost extremity of the River Potomac:—a lighthouse with a fixed light, at 65 feet, 16 miles to the northward of Windmill Point. On the edge of the shoal, which stretches three miles, E.S.E., from the Point, is a lightvessel, moored in $4\frac{3}{4}$ fathoms, which exhibits two distinct lights.

Upper Cedar Point.—A lightvessel bearing a fixed light, off the point, below the Narrows.

Lower Cedar Point.—A lightvessel, bearing a fixed light, between Potomac and Yates Point.

Piney Point.—East side of Potomac River, a fixed light, visible about 15 miles.

Point Lookout.—The north point of the Potomac: a small lighthouse or beacon light, bearing N. by W. $\frac{1}{2}$ W., 11 miles, from the lighthouse on Smith's Point.

Smith's Isle.—The largest of the Tangier Islands, opposite to the mouth of the Potomac; a lighthouse on Frog Point, the N.W. point of this island, at the entrance of Kedge's Strait, with a fixed light from which that on Smith's Point bears S.W. $\frac{1}{2}$ S., 12 miles, and that on Point Lookout W. $\frac{1}{2}$ N., $10\frac{1}{2}$ miles.

Hooper's Strait.—A lightvessel within Hooper's Strait, for making the harbour within Hooper's Island.

Cove Point.—A fixed light at 50 feet. This point is on the north side of the Patuxent River.

Thomas Point.—On the north side of South River, five miles below Annapolis, and 34 miles north from Cove Point Light, a lighthouse with fixed light. From the shore hereabout the shoal extends south-eastward to the distance of two miles.

Greenbury Point.—North side of entrance to Annapolis Harbour, a fixed light, visible 12 miles.

Petapseo or Baltimore River.—On Bodkin's Point or Isle, upon the south side of the entrance, and surrounded by an extensive shoal, is a fixed light, and on the north side of the river are two lighthouses, with brilliant fixed lights, serving as the leading lights for the Petapsco, when nearly up with Swan Point, on the eastern shore.

Lazaretto Point.—North side of entrance to Baltimore Harbour, a fixed light, visible 15 miles.

Pool's Island.—12 miles N.E. by N. from Bodkin's Point: lighthouse with fixed light, between the entrances of the Gunpowder and Bush Rivers. There is also a tower with bell and machinery, near the same, to warn those approaching the bank in thick weather.

Sharp Island.—Off the entrance of Choptack River, a fixed light, visible 12 miles.

Turkey Point.—At the mouth of the Elk River, 17 miles, N.E. by E., from Pool's Island: a fixed light.

Concord Point.—At the mouth of the Susquehana, near Havre de Grace, $6\frac{1}{2}$ miles N.N.W. from Turkey Point: a fixed light.

Chesapeake Bay is 160 miles in extent from North to South, and is considered to be one of the finest estuaries on the globe. It is the recipient of many rivers which fall in'o it on all sides, as the Susquehanna, Patapsco, Patuxent, Potomac, &c.

In advancing towards the entrance of the Chesapeake, the *Gulf Stream* is usually crossed from the south-eastward, in its narrowest part, near the parallel of Cape Hatteras, or 35° 10′ N. In crossing it thus, the temperature of the water will be found, in *September*, to be about 83°, thence diminishing to the shore. Even in *December*, when in soundings of 19 fathoms, in latitude 35° 19′, with the air at 45°, the water has been found at 68°, after getting into soundings. Within the stream, after reaching soundings, you will get into the cold southerly current, the prolongation of the currents passing over the Newfoundland Banks.

The lighthouse on Cape Henry, in latitude 36° 56′, is an excellent mark for the Chesapeake. Having passed this cape, in sailing upward, in the main stream, low banks, fringed with trees, are all that is to be seen of the country, excepting here and there a house near the shore, and occasionally a lighthouse, small town, or village.

It should be observed, generally, that in the Chesapeake, all the low points, both of Virginia and Maryland, have shoals extending from them; and should, therefore, have a good berth in passing, the water being shoal.

SAILING DIRECTIONS.—In coming in for the Chesapeake you may advance to Cape Henry, as previously instructed, but cautiously avoid the Middle Ground, which is a dangerous bank, lying at the entrance of the bay, the outer part of which lies 9 miles, E.N.E., from Cape Henry, and 7 miles, S.E. by E., from Cape Charles. In fair weather you may see the land, when approachiug the bay, after you get into 10 or 11 fathoms regular soundings, at which time you will be about 5 leagues to the southward of it. To the northward of the land, in 6 fathoms, the soundings are irregular, and the ground coarser. With a northerly wind you may approach the Middle Ground to the depth of 5 fathoms. To the southward of it you will find 12 and 13 fathoms, as well as in the channel between it and Cape Henry. This channel has a depth of 8 fathoms close to the cape. With a fair wind, you may run in with the lighthouse bearing W. by N.; and, with a turning wind, you may stand to the southward until it bears N.W. by N., and to the northward until it bears West. If requisite, you may run in with the lighthouse bearing West, as this course will lead to the channel-way, in from 7 to 10 fathoms, sticky bottom. It is then proper to take soundings towards the southern shore; and, in order to this, steer West, until you have advanced to a short distance from the lighthouse; then, rounding the point, you may haul into Lynhaven Bay, and drop an anchor as most convenient, in from 7 to 4 fathoms.

The navigation hence to Hampton Roads has been greatly facilitated by the lighthouse on Old Point Comfort, on the south side of the entrance of James River; two miles to the eastward of which is the lightvessel, on the north side of Willoughby's Bank, which forms the south side of the channel. These were the more necessary, as the channel appears, from a late survey, to be much more contracted than formerly; the northern bank, named the Horse-shoe Flat, having extended itself to the S.E., while the shoals on the south side have also increased. The light on Point Comfort is fixed, and bears W.N.W. $\frac{1}{2}$ W., 5 leagues, from that of Cape Henry. The east end of Willoughby's Bank lies on the same bearing, at $3\frac{1}{2}$ leagues. The lightvessel on the north side of Willoughby's Bank lies in $3\frac{1}{2}$ fathoms, with Point Comfort Light bearing W. $\frac{1}{4}$ N., 2 miles; Black River Point Light N. $\frac{1}{4}$ W., 5 miles; Cape Henry Light

E.S.E. ¼ E., 13 miles; Willoughby's Bluff S.S.E., 2 miles; and the Ripraps, on the south side of the channel, W.S.W., 3 miles.*

In proceeding for Hampton Roads, and coming in by Cape Henry, without a pilot, with a free wind and commanding breeze, during either the ebb or flood, bring Cape Henry light to bear E.S.E., and steer W.N.W. until you get soundings on the Horse-shoe Flat, in 7, 6, or 5 fathoms. There are no soundings at 5 fathoms on the courses between Cape Henry and the bank. The first soundings on the latter will be 6 or 7 fathoms, with a sticky or tough bottom, at about four miles from Cape Henry light; but the five fathoms bottom, sandy, is about a mile farther; and here a vessel may anchor. The course hence is West, until you get on the south side of the channel, with an ebb-tide; with flood steer W. ½ N. or W. by N. These courses will lead into 5 fathoms, on the south side, whence you steer W.N.W. into 6 or 7 fathoms, or up to the lightvessel on Willoughby's Bank, where the bottom is sticky or stiff. Next bring the lighthouse on Old Point Comfort to bear West, or W. by S., and run for it until nearly up with it, or to within the distance of half a mile. In proceeding hence to the S.W., take care not to advance nearer to Hampton Flats, on the north side, than in 10 fathoms, the edge being steep-to. Now haul up S.W. by W. till the lighthouse on Old Point Comfort bears about N.W., then steer S.W. for Hampton Roads, where there is good anchoring in 5, 6, or 7 fathoms. With the lighthouse N.E. five miles, there are 4 and 5 fathoms.

The channel from Hampton Roads to Norfolk is too intricate for a stranger to navigate; he must, therefore, have a pilot.

Should the lightvessel on the north point of Willoughby's Bank not be at its station, you may know when you have passed that point by the increasing depth of water, as 9 or 10 fathoms, or more, will be found; previously to this, if you shoalen your water on the south side, from 5 fathoms, haul off to the northward, and proceed in 6 or 7 fathoms until nearly up with the point of Willoughby's Shoal: approach the latter no nearer than in 7 fathoms. On hauling northward, more water will be found.

On the Horse-shoe side of the entrance, the bottom is of hard sand: the mid-channel has a soft bottom, but Willoughby's Bank, again, is of hard ground. From the south side, where the ground is soft, you may, therefore, always know when you are approaching Willoughby's Bank, by the change in the soundings.

It is also to be noticed that there is, on the south edge of the Horse-shoe, a small shoal, named the *Thimble*, at a little below Willoughby's lightvessel, on the opposite side of the channel. It has about 2 fathoms over it. From abreast of the shoal, Black River Point bears N.N.W. There is good anchoring on all parts of the Horse-shoe, at from 3⅔ to 4 miles from land, and thence to the Tail, or outer part, and never inshore for small vessels. The setting of the tide varies considerably, and requires particular attention.

The *flood tide* runs in round Cape Hen y and into Lynhaven Bay until 11 o'clock on the full and change; and, out of the way of the Chesapeake stream, it flows at 10; in Hampton Road, at 10½. The tide varies considerably in its direction, according to the time from ebb or flood. The ebb from James and York Rivers sets over the Middle Ground to the eastward, which renders the navigation thereabout dangerous in the night. At the entrance of Elizabeth River the rise of the tide is only 3 or 4 feet.

Cape Henry or Lynhaven Bay to York River.—In sailing from this bay for York River, you may safely bring Cape Henry S.S.E., which leads over the tail of the Horse-shoe, in 5 or 6 fathoms. This part of the shoal lies in ridges, so that you will frequently find more than a fathom of difference at a cast, but without danger. The ebb-tide down the bay sets over it to the southward.

On the tail, and along the N.E. side of the Horse-shoe, the shoalings are gradual, but the western side of the Middle Ground is steep. In proceeding onward, you should not steer from the cape to the northward of N.N.W., allowing for tide and wind, lest you get upon the latter. You may thus steer until Cape Charles bears East, and may then steer N.W. ½ N., or N.W. by W., according to wind or tide. You must be very cautious, in a northerly wind, when standing towards the Horse-shoe, especially with the ebb, which sets strongly over it, as already noticed.

* Vessels approaching Hampton Roads must be cautious not to pass this lightvessel to the southward, as they will thereby inevitably run aground. The lightvessel may be distinguished from the light on Old Point Comfort by bearing two lanterns, one a little more elevated than the other, and during foggy weather those approaching it will hear the bell which is run aboard the vessel.

The lighthouse upon New Point Comfort, as already noticed, bears a fixed light. With this point bearing N.N.W., and Back River Point S.W. by S., you will approximate to the York Spit, in 5 or 4 fathoms, and may proceed N.W. by W. for the York River. In advancing, you must not run in for the shore nearer than to 5 fathoms, until you have entered the river above the marsh; then proceed in 9 or 10 fathoms, and run up and anchor between York and Gloucester, in what depth you please.

When turning up, with a contrary wind, stand towards the Horse-shoe to 5 or $4\frac{1}{2}$ fathoms, and from it to $6\frac{1}{2}$ or 7 fathoms, until abreast the entrance of Pocosan Creek, close to the mouth of York River. Be cautious of standing to far in, lest you touch on the shoal extending from Tooes Marsh. When thus far advanced approach no nearer on the south side than the depth of 7 or $6\frac{1}{2}$ fathoms, between this and the Town of York. On the opposite side you should not stand towards the small islands, named York Isles, lying off Monday's Point, nearer than 11 or 10 fathoms.

Close to the extremity of York Spit there is a depth of 7 fathoms, close to the middle of it there are 10 fathoms, and close to its N.W. part, near the York Isles, there are 13 fathoms; being all steep-to. Within this the flat from the north shores extends nearly one-third over the river, and should not be approached nearer than in 9 or 8 fathoms.

Cape Henry to Mobjack or New Comfort Bay.—You may proceed from Cape Henry, over the tail of the Horse-shoe, &c., as above directed, for sailing towards York River. Bring the lighthouse on Cape Henry S.S.E., and steer N.N.W., about 5 leagues, or until you are $5\frac{1}{2}$ leagues from the cape: at this distance Cape Charles will bear E.S.E. $\frac{1}{4}$. E., and you will be abreast of the north end of the Middle Ground. With a turning wind you should not stand farther to the eastward than with the lighthouse on Cape Henry S.S.E., or you may be in danger of the Middle Ground, as before observed. To the westward, you may pass into 5 or $4\frac{1}{2}$ fathoms with safety; but, to the eastward, into not less than 8 fathoms.

A shoal extends to the S.E., full two miles, from New Point Comfort, which must, of course, be cautiously avoided. Between this shoal and York Spit you may run in, and anchor under the point in 4 or 5 fathoms, fine bottom, and lie securely from northerly and N.E. winds.

The four rivers which empty themselves into Mobjack Bay, namely the Severn, Ware, North River, and East River, are navigable to vessels of 50 or 60 tons burden, and are places of considerable trade.

The direct bearing and distance from Cape Henry to the lighthouse on New Point Comfort, are N.N.W. $\frac{1}{2}$ W., $8\frac{1}{2}$ leagues. The passage by night is dangerous, owing particularly to the tide of ebb, which sets irregularly over the Horse-shoe, and sometimes deceives those best acquainted with this navigation.

In Mobjack Bay, vessels at anchor are exposed to winds blowing in any direction between E.S.E. and S.S.E.; but, when thus incommoded, they may go into the River Severn, on the west, where they will lie safely. To sail in, bring New Point Comfort Lighthouse E. by S., and steer W. by N. until the entrance of the river bears W.S.W.; you may then steer in W.S.W. or S.W. by W., and be land-locked from all winds.

In running for the river you may observe two clumps of trees on the port hand, which, at first, make like islands, but on nearer approach the difference will be found. Keep in the middle, and with the lead going; thus passing between two points of marsh, you will carry 3 fathoms all the way over a muddy bottom. Vessels for sea may pass from this river with the wind from any point between N.W. and S.W.

If you are desirous of entering the Rappahannock River, you will observe the light-vessel, which rides off Windmill Point, and carries two lights; it bears about E.S.E. from the Point, and is distant from it 5 miles. When this lightvessel comes about N.W., you may run directly towards it, leaving Piankatank on your port side, where you will have from 7 to 3 fathoms.

But if you wish to go into Tangier Sound, you should bring Windmill Point to bear S.W. by W.; steer in N.E. by E., and you will get soundings on Tangier Bar in 5 fathoms; the cluster of trees at the fort on the southern Tangier Island will then be seen bearing N.E. You may then edge off and on the southern side of the bar, in from 3 to 15 fathoms, hard sand; but it will not be prudent to go nearer to Tangier Bar than 6 fathoms, for it suddenly shoals off that depth to 2 fathoms in the distance of 300 yards. Take your soundings on the Watt's Island Spit side, for there you will find the depths decrease gradually. Should you, with a small vessel, be desirous of anchorage, there will be good holding ground, sand and clay, when Crockett's House

bears N.W.; there you will ride secure from all winds but those from the southward and westward. Should you wish to proceed further up the sound, you should keep in mid-channel, until you bring the house on Kedge Island to bear west, then steer immediately for the clump of trees on it, until your water shoalens to 2 fathoms, when you may proceed through the strait, and when Frog Point light comes S. by E. you will have cleared the Middle Ground, which lies in the fairway and divides the passage into two channels. Being then in about 3 fathoms, steer S.S.W. to clear a bar stretching off Holland's Island, until you get sufficient water to enable you to stand up the bay; this bar is between 4 and 5 miles in length, the ground is irregular and composed of hard sand.

New Point Comfort to Potomac River.—You may avoid the Spit which extends 2 miles to the S.E. from New Point Comfort, by not running into less than 4 fathoms water. At about $2\frac{1}{2}$ leagues, N.N.E. $\frac{1}{2}$ E., from New Point Comfort, and 5 miles E. $\frac{1}{2}$ S. from Iron Point, lies the Wolf-trap Rock, over which there are only 12 feet at low water. Between this rock and New Point Comfort there are 8 and 9 fathoms, and there are 7 fathoms near the rock. From the Spit, extending off the point to the entrance of Rappahannock River, the course is N. $\frac{1}{2}$ W., and the distance 17 miles; thence to the flat, extending to the south-eastward from Smith's Point, the course and distance are North above 5 leagues.

Windmill Point is just half-way between New Point Comfort and Smith's Point. The Windmill Reef now extends 4 miles from the Point to the S.E. by E., and forms a broad shelf of $2\frac{1}{2}$, 2, and $1\frac{1}{2}$ fathoms, thence shoaling to the dry shore. On its extremity is the lightvessel, mentioned above, which is, of course, to be left on the port side.

Should the weather render it necessary to take shelter in the Rappahannock, you leave the lightvessel off Windmill Point on the starboard hand, and the mouth of the River Piankatank on the port hand; you will thus run up W.N.W., and shoalen your water from 6 or 7 to 3 fathoms. On approaching Stingray Point, which divides the two rivers, keep to soundings on the port side from 3 to 6 fathoms, and not deepen to more than 6, when standing to the northward. You will thus avoid the flat surrounding Windmill Point, which is very steep. Keep over to the southern shore in the depth above mentioned; and, having entered, you may edge to the northward, and anchor in 7 fathoms, good ground, and secure from all winds.

The lighthouse on Smith's Point, which is the S.E. extremity of the River Potomac, exhibits a fixed light, and at the end of the shoal or spit, which stretches out from the point, a lightvessel is stationed in $4\frac{3}{4}$ fathoms, showing two distinct lights. It bears from Smith's Point light E. $\frac{1}{2}$ N., distant $4\frac{1}{2}$ miles. Vessels passing up or down the Chesapeake should always avoid going between this lightvessel and Smith's Point.

On sailing from New Point Comfort, on the course N. $\frac{1}{2}$ W. you may run along shore in 5 or 6 fathoms; and after passing the entrance of the Rappahannock, in from 5 to 7 fathoms. Towards Smith's Point you should not, however, approach to less than 7 fathoms.

The River Potomac separates Virginia from Maryland; its entrance being formed by Smith's Point on the south side, and Point Lookout on the north. The distance between the two points is more than 3 leagues. On Point Lookout there is now a light bearing N. by W. $\frac{1}{2}$ W., distant 11 miles, from the lighthouse on Smith's Point.

If bound hence into St. Mary's River, within the north side of the Potomac, give Point Lookout and the shore about it a good berth; and, on approaching St. George's Island, (8 miles above Point Lookout) keep nearer to the main on the port hand than to the shoal extending from that island. The course into the river is nearly N.W., and you may anchor where you please in 5 or 6 fathoms, the river being all open.

If bound to *Wicomico*, higher up the Potomac, the course and distance from the east end of St. George's Island past Ragged Point are N.W. $\frac{1}{2}$ W. and distance nearly 3 leagues. On the south or port side, flats extend from the shores, in some places, to the distance of a mile, and should be approached no nearer than in 6 fathoms. In the mid-channel you will find 11, 10, 12, 10, and 8 fathoms. In passing Ragged Point, you must give it a good berth, in order to avoid the shoal which stretches from it. Above Ragged Point, in the middle of the channel, there are 6, 5, $4\frac{1}{2}$, and 7 fathoms of water. You will next advance on a W. $\frac{1}{2}$ N. course to *Clement's Island*, passing Nominy Bay on the port hand. From abreast of Clement's Island, you may steer W.N.W. in 6, 5, and 4 fathoms, until you have Wicomico River open; then pass pretty near to the island, which is on the east side of the entrance, in order to avoid

the shoal stretching from the point on the western side. Steer into the river about North, and anchor on the south side of *Newton's Point*, in 5 or 4½ fathoms.

The distance from Ragged Point to the City of Washington is about 24 leagues; and navigators unacquainted with the river should take a pilot for that place.

Potomac River to the River Patuxent.—In sailing from the entrance of Potomac to that of the Patuxent, you must be careful to avoid the flat, before described, which extends from Point Lookout, by not going into less than 6 or 7 fathoms. Opposite to this point the flats from the Tangier Islands extend so far to the westward as to narrow the Chesapeake Channel to a breadth of about 5 miles. This part of the eastern flats is steep-to, having 12 fathoms close to it, to the west of the lighthouse, on the N.W. point of Smith's Island, named Frog Point. It exhibits a fixed light, from which that on Smith's Point bears S.W. ½ S., 12 miles, and that on Point Lookout W. ½ N., 10½ miles. In sailing between Point Lookout and the entrance of the Patuxent, a good depth to keep in is 7 and 8 fathoms. On the eastern side, near the flat, there are 10, 12, 9, and 10 fathoms.

Cedar Point, the S.E. point of the Patuxent, is low and sandy, and has some straggling trees upon it. A flat extends from the point to the eastward and northward. The north side of the river may be known by the high lands named the Cliffs, having trees upon them; from this side, as well as from the other, there is a flat, but the shoalings on each side are gradual, and the bottom soft. In mid-channel there is a depth of 8 fathoms.

Within Cedar Point, on the south side, is Rously's or Hog Point: on the north side of the entrance is Drum Point. The latter is low and sandy. Without these points you may anchor; or, passing between them, proceed farther up the river.

Having arrived to the eastward of Point Lookout, with the wind a-head, you will have a good channel to beat in up to the Patuxent, and may stand to either side into 4 or 5 fathoms; but, observe that, when standing to the eastward, it is proper to tack when you have gained 9 or 10 fathoms, and the ground suddenly shoalens to 5 or 4 fathoms, and thence to 2 fathoms, hard sand. On the western side the soundings are more regular.

The course and distance from Point Lookout to the entrance of Patuxent River are N. by W. ½ W., 5 leagues. The depths 7 to 8 fathoms up to Cedar Point. Should it be requisite to anchor, and you cannot get into the Patuxent, which frequently happens with northerly winds, you may run in under Cedar Point, and anchor in 3 or 4 fathoms, good ground.

The entrance of the Patuxent is remarkable from its having very high land on the north side, with red banks or cliffs. You may enter the river by the preceding directions; or, give Cedar Point a small berth, and stand to the northward until you have the river open, when you may run in for Drum Point on the starboard side, which is sandy and bold, with some bushes on it, as before described. Double this Point, and come to in 3 or 2½ fathoms, where you may lie securely.

In beating in or out of the Patuxent, you may stand towards the north side, against the high cliffs, into 3 fathoms, and towards the south side to 5 fathoms, water. In the channel there are 7 fathoms. When standing towards the south shore, you will perceive some buildings on the north side, above Drum Point; and so soon as these buildings come on with that point, you must tack, in order to avoid the shoal which extends from the south side at the entrance.

Hooper's Strait is the inlet on the eastern side of the Chesapeake, formed by the bank of Holland's Islands on the south, and that of Hooper's Island on the north. Within the straight is a lighvessel, for making the harbour within Hooper's Island. In thick weather, whether by night or day, a bell will be rung on board the lightvessel, at short intervals, and if thick and blowing, it is ordered to be kept constantly ringing, in order to warn those approaching.

In entering here, if running upward, bring the light to bear E. by N., and stand for it, which course will take you across Hooper's Island Bar in about 4 fathoms water. Continue on until you deepen into 7 fathoms; then steer E.N.E. until the light bears East, and run for it: pass the light on your starboard hand, which will carry you into the harbour. If coming down Chesapeake, bring the light to bear N.E., and steer for it, when you will gradually shoalen your water on the south side. You may, with safety, course round the bar, or shoal in 3 fathoms, until you bring the light to bear East, then steer as before.

On leaving the Patuxent, and being bound up the Chesapeake toward Annapolis,

you must give a wide berth to the cliffy land southward of Cove Point, as a flat extends from it to the distance of half a league. On the edge of this flat there are 2½ and 3 fathoms; but there are 10 at no great distance. On sailing out run eastward into the main stream until you have 9 or 10 fathoms of water, when you will be near mid-channel: the course and distance hence up to Poplar Island are N. ½ W., 9 leagues. In running thus, you will have 10, 9, 8, 7, and 10 fathoms. With Sharp's Island bearing East there are 10 fathoms muddy bottom.

In proceeding as above you will pass Sharp's Island, lying off the eastern shore at the entrance of Choptock River, and eight miles to the southward of Poplar Island. Sharp's Island is three miles long, and surrounded by a shoal more than a mile broad; but with an adverse wind good anchorage under it may be found. The similar isle, named James Island, lies 5 miles, S. by E., from Sharp's Island, and is likewise surrounded by a shoal. To gain the anchorage under Sharp's Island, having passed James's Island Point, steer to the N.N.E., which will carry you in under Sharp's Island, when you may anchor at about half a mile from the island, secure from northerly and N.W. winds. There are pilots who may be engaged at this place.

From the channel west of Poplar Island, a N. by E. course, to the distance of 4½ leagues, will carry you up to the Severn, or Annapolis River. Should the wind oppose you when up with the south end of Kent Island, you may run in under it, to the north-eastward of Poplar Isle, and anchor in 6 fathoms, secure from all winds, except from those from the south-westward.

ANNAPOLIS.—From the River Patuxent to the River Severn, the western side of the bay is rather high; but the soundings are generally gradual. In running from Poplar Island to Tally's or Annapolis Point (the southern point of the entrance of the Severn River), you will have from 7 to 8 fathoms; but you must observe to give a good berth to Tally's Point, as well as to Thomas Point, lying more to the southward, as there is a long spit of hard ground from each. The spit extending from Tally's Point is marked at its extremity by a buoy lying in 23 feet, at low water.

Upon Thomas's Point, on the north side of South River, 5 miles below Annapolis, and 34 miles north from Cove Point, there is now a lighthouse with a fixed light at 30 feet. From the shore hereabout the shoal extends south-eastward to the distance of 2 miles.

Vessels bound into Annapolis Harbour from down the Bay should give Thomas's Point a berth of at least 2 miles, and not open the poplars at Whitehall Creek to the westward of the trees on the western end of Hackett's Point. This range will carry them clear of the shoals off Thomas's and Tally's Points in 7 fathoms water. When off Thomas's Point steer N. ¼ W. by compass, until the whole length of the River Severn is open; then haul in N.W. ½ N. in this range, passing to the southward of the black buoy off Greensberry's Point, and when near the white buoy off Horn Point, haul up to the northward towards Fort Madison, and anchor in 19 feet water, muddy bottom. Vessels drawing under 12 feet water, can stand for the inner white buoy or channel buoy and anchor inside it, in from 13 to 14 feet water, muddy bottom.

Vessels bound in from up the Bay, should give Sandy Point a berth of at least a mile, and steer S.W. by S. by compass, in from 7 to 8 fathoms water, until the end of Greensberry's Point is in range with the State House; then haul in W. ½ S., until the River Severn opens, and steer N.W. ½ N. as before directed.

Vessels making the Inner Roads for a harbour can anchor in from 3 to 4 fathoms water, muddy bottom, with the poplar on Horn Point in range with the State House, and Tally's Point open with Thomas's Point Lighthouse.

The best anchorage in the Outer Roads for large vessels of war is in 8 fathoms water, muddy bottom, with the poplar on Horn Point in range with the State House, and Thomas's Point Lighthouse bearing S.W. ½ S. by compass. This anchorage is distant 4½ miles from the city of Annapolis.

Annapolis State House is in lat. 38° 58′ 41″ N., long. 76° 29′ 50″ W. Variation, June, 1845, 2° 14′ W.

It is high water, on the days of full and change, at Annapolis (Corrected Establishment), at 4h. 43m. Rise of the highest tide 2 ft. 6 in. Fall of lowest tide, below the mean point of low water, 1 ft. 4 in.

From the middle of the channel, east of Annapolis, the course and distance to Baltimore River are N.N.E. and N. by E., 4½ leagues. In sailing this course you will find from 4 to 10 fathoms water, but it is recommended not to go nearer the western shore

than 4½ or 5 fathoms. When the river appears open and Swan's Point bears about E.S.E. you may haul in for the river.

Immediately opposite the entrance of the Patapsco River, on the east side of the Chesapeake, is the entrance of the Chester River, of which the sands bordering either side of the channel are buoyed. When running in you will find a depth of from 40 to 25 and 30 feet, and may anchor immediately you have rounded the north point of Kent Island, in a depth of 5 and 6 fathoms, on a bottom of soft mud. *To steer in.*—When up with the lower 5-fathoms buoy, the buoy on the south end of the bar, running off Swan Point, bears East, and the buoy on the north-east end of the spit making off from Love Point (Kent Island), bears E.S.E.; steer now E. by S. ½ S. and you will pass between the buoys in 27 feet water. When past the buoy on Kent Island Spit, steer S. by W. ¼ W., until the tall poplar tree on Love Point bears N.W. ¼ W., when you may anchor in 30 feet water on the west side of the channel, soft bottom; but a small sized vessel, if the wind is North, can run up and anchor off Hail Point, the channel up to which is clear.

The latitude of Swan Point is 39° 8′ 26″ N., and longitude 76° 17′ 11″ W. The variation of the compass is 2° 30′ 4″ W., from a series of observations made in June, 1849. It is high water, on the days of full and change, at 5h. 23m., with a rise of tide of only 2 feet.

PATAPSCO OR BALTIMORE RIVER.—This river has a shoal entrance, and a rather intricate navigation. The best mark for sailing in is, a gap in the woods on Sparrow's Point a little open of North Point, which will lead in, in the best water, in 3 fathoms, soft bottom. This mark is to be kept on until Bodkin Point bears S.S.W., when you steer West or W. by N. into the river, giving North Point a berth of about a mile.

On Bodkin's Point or Isle, upon the south side of the entrance, and surrounded by an extensive shoal, is a fixed light; and on the north point of the river are two light-houses, with brilliant fixed lights, which are the leading lights for the Patapsco when nearly up with Swan Point on the eastern shore; these lights in one, bearing W.N.W., not only lead into the river, but are a good mark for anchorage in the Outer Road, in 4½ and 5 fathoms, with Bodkin's Point W. by S.

An inner or swash channel leads into the Patapsco, within the Outer Bodkin Shoals. A hard knoll or oyster bank, one of these shoals, having 6 feet over it, and from this knoll the Bodkin lighthouse bears N. 41° W., the bluff of Sandy Point S. 9° W., and two light green trees, appearing as one, standing over a red bank S. 84° W., distant 2 miles, a small mast buoy painted black and white alternately, with an O upon it, is placed on its northern edges.

The following buoys are in the river, but it may be noticed that the Can and Log Buoys, heretofore used to buoy off the Swash Channel and River of Patapsco, have been removed, and spar or mast buoys adopted in their stead.

These buoys are now moored in numbers 5, and from 11 to 20, painted, some entirely white, others black, and some black at the surface of the water, and also at the head, but white between; the white buoys showing the south or port side of the channel, when sailing up the river; the black buoys, the north or starboard side; and the white and black buoys, denoting the knolls or dangers that lie in the way of the channel, or elsewhere, and which must be avoided; their position being as follow :—

No. 5. A buoy painted black and white alternately, lies on the edge of a hard knoll of 15 feet water, immediately on the Ship Channel Range, abreast of the easternmost Man-of-War Shoal, in 3 fathoms, sticky bottom.

No. 12. A white buoy is placed on the port side of the channel to mark the S.E. Bar.

No. 13. Shows the starboard side of the channel, and is placed just at the edge of the 7 feet knoll.

No. 11. Is a white buoy in 18 feet, soft ground, on the outer edge of the Rock Point Shoal.

No. 14. A white and black striped buoy 18 feet, soft, on the edge of a hard 14 feet knoll, between North Point and Rock Point.

No. 15. A black buoy in 18 feet, soft, denotes the shoal off North Point.

No. 16. A white and black striped buoy in 18 feet, just outside of the Rock Knolls.

No. 17. A black buoy in 18 feet, soft, on the outer edge of the Sparrow's Point Knolls, of 12 feet, hard ground.

No. 18. A white buoy in 4 fathoms, soft, on the outer edge of the shoals extending from Hawkin's Point Bar.

No. 19. A black buoy in 20 feet, soft, on the outer edge of a 14 feet shoal, hard. extending from Soller's Point Bar.

No. 20. A black buoy in 18 feet, soft, on the eastern extremity of the shoal, extending from the Lazaretto.

No. 22. There is a buoy, painted black and white alternately, on the sunken rock between North Point and Sparrow's Point.

Note.—No. 5 shows 12 feet above the surface of the water; all the others appear from 12 to 14 feet, except No. 19, which does not show quite so high. A good berth should be given to all the striped buoys, as they are expressly placed to mark the shoals.

The black buoys indicate the northern extremity of the channel, and the white buoys indicate the southern extremity of the channel, so that it will be dangerous to attempt to pass to the northward of the first, and equally so to go to the southward of the latter. Besides the foregoing buoys, there is placed a black and white buoy at the Old Wharf, abreast of Fort M'Henry, which is marked No. 21.

Spar and mast buoys are placed to buoy off the Ship Channel leading from the Chesapeake into the River Patapsco. We have already noticed the small mast buoy, painted black and white, with an O upon it, lying at the entrance of the river, on the northern edge of the Oyster Bank.

Buoys in the Ship Channel.—No. 1 is a mast buoy, painted white, to the westward of which you must not go. No. 2 is also a white buoy to range with No. 1. No. 4 is red, and placed exactly on the Ship Channel range, so that by observing it, you will, without further notice, know when to run in for the river, as it will range precisely with the two lighthouses on North Point. No. 3 is a white buoy, upon or near a knoll of 16 feet, hard, on the port side of the Ship Channel. No. 5 is a black and white buoy, on a hard knoll of 15 feet, which lies in the Ship Channel with the marks nearly on; in going up the river, this had better always be left on the starboard side. Nos. 9 and 10 are two mast buoys which mark the southern extremity of the Man-of-War Shoals. Vessels beating through must not go beyond this range. Nos. 6 and 7 are two white buoys, which show the southern side of the channel, and will range with No. 3 before-mentioned. No. 8 is a white buoy on the end of the Bodkin Bar.

Proceeding further up the Chesapeake, you will see a newly-erected lighthouse on Pool's Island, which shows a fixed light, and must be left on your port side. Beyond this, on Turkey Point, is a similar lighthouse to conduct you to Charlestown; and a lighthouse is built on Concord Point, showing a fixed light near the entrance to the Susquehanna River.

THE COAST SOUTHWARD.—From the River Chesapeake the whole coast of North Carolina is bordered by a chain of low sandy islands, which form with the main land numerous sounds, in general of an inferior depth. Some of these sounds are of great extent, of which Currituck, Albemarle, and Pamlico, are the principal. The latter, to the westward of Cape Hatteras, extends 80 miles from N.E. to S.W., and is from 20 to 30 miles in width; it receives the Tar River and the Neuse at its western extremity, and communicates with the Atlantic by Ocracock Inlet, and with Albemarle Sound by the channels on each side of Roanoak Island. Albemarle Sound is about 60 miles long from east to west, and from 5 to 15 miles wide; at its western extremity it receives the Chowan and Roanoak Rivers, of which, indeed, it may almost be considered the continuation: and through Currituck Sound and its inlets, which stretch to the north, it communicates with the Atlantic. There is a continual succession of inlets between the long, low sandy islets, or reefs which skirt the coast, very few of which admit the passage of sea vessels; some were formerly deep enough for this purpose, but have since been closed by the silting up of the sand, in consequence of which the navigation of North Carolina is principally confined to small vessels.*

From Cape Henry to Cape Hatteras the distance is 34 leagues, and the course

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* The River Chowan is navigable to the town of Murpessbro' on the Meherrin, 10 miles above the confluence of the two rivers. The Roanoak is navigable for very small vessels to Weldon. The Tar or Pamlico is navigable to Washington, a distance of 30 miles, the depth being about 9 feet; and boats can go to Tarborough, 50 miles further. The Neuse is navigable for small vessels to Newbern, a distance of 40 miles. Newbern is the largest town in the State, and carries on an important trade in tar, pitch, turpentine, and grain.

S.S.E.; but the land near the latter bending to the south-westward, that direct course cannot be sailed upon. The land is all low, and as already noticed, bordered with narrow islets. From the extremity of Cape Hatteras a series of dangerous shoals extends to the S.E., as noticed subsequently, and at 17 miles, N.N.E., from the cape are the Wimble Shoals, extending 6 miles from the nearest shore, but between them and Cape Henry the shore is generally clean, and a vessel may approach with westerly winds to the depth of 7 fathoms.

About 30 miles to the northward of Cape Hatteras, in lat. 35° 47′ 30″ N., and long. 57° 27′ W., is Boddy Island, upon which is a lighthouse showing a revolving light at 56 feet above the sea, visible about 15 miles.

The *Wimble Shoals* lie in lat. 35° 32′, and extend about 7 miles from shore; the sea always breaks over them in a gale. The Resolution, a 74-gun ship, passed near them in the year 1795, and an officer on board made the following remarks:—"On standing in-shore to Wimble Shoals, in the forenoon of the 10th February, 1795, at 9 o'clock, we saw the land; being then in twenty fathoms; at ten shoalened suddenly to 9 fathoms, and wore ship; we could then perceive from the deck the sea break upon Wimble Shoal; and the land, consisting of a low sandy beach, was seen from the poop: we stood off E.N.E. deepening the water as suddenly as we had before shoalened it; and, in running 22 miles, were out of soundings: therefore reckon the breakers on Wimble Shoal to be 7 miles off when we wore off shore, and the land as much more from the breakers. The whole extent of the soundings from this coast cannot exceed 12 leagues."

Fish Bank.—To the southward of the Wimble Shoals there is a large muscle bank, intermixed with cockles, and small pebbles, lying in 5 fathoms water; that bank abounds with fish, such as sea-bass, sea-trout, flounders, skate, tusk, and dog-fish. The sea-bass here are remarkable for their size, generally weighing from 4 to 6 pounds each.

A vessel has filled two barrels on this bank in the space of as many hours, with only three lines and three hooks; and there is no doubt, if two hooks had been applied to each line, double the quantity might have been caught. The water upon this bank differs very little in colour from that of the ocean; and, in the depth of winter, is very little colder. There is likewise to be caught, in the winter season, fish, by towing over this bank; that is, if you have suitable bait, such as the ballabo, which they generally have in the West Indies. You must be sure to have good tackling, as the fish are remarkably strong, commonly weighing from 20 to 30 pounds each. Four or five lines have been lost in an hour, and at last they have been obliged to bend the deep sea-line to the inner end of the tow-line, and luffing the vessel into the wind, the fish have been taken.

It may be observed that to the northward of Cape Henry the ground is generally composed of coarse sand with some shells, but from Cape Henry to Cape Hatteras it is mostly of fine sand; this will help you to distinguish whether you are in the vicinity of either cape.

CAPE HATTERAS.—This cape is low, and at 1¾ mile from its extremity is a lighthouse, 90 feet high, showing a fixed light at 95 feet above the sea, visible at the distance of 20 miles. From the cape a shoal runs out to the south-eastward about 1¼ mile, which has from 7 to 16 feet water upon it, bottom of hard sand. At a similar distance, and in the same direction from this shoal, but separated from it by a depth of 3¾ and 4 fathoms, is a small shoal, named the Diamond, on the centre of which there are but 9 to 12 feet water: this shoal is distant from the cape about 2½ miles, and is steep-to, so that it will require great caution when sailing in the vicinity, yet there is a good passage between it and the land for small vessels in moderate weather, or when the wind is off the shore. It is, however, considered safest not to approach Cape Hatteras nearer than a depth of 10 to 15 fathoms.

At the distance of 3¾ miles to the (S.E. by S.)* of the Diamond Shoal, and at 6½ miles from Cape Hatteras is the outermost of the Cape Hatteras Shoals, consisting of a series of shallow spots of 9 to 15 feet water: these are named the Outer Shoals and from their south-western part the lighthouse bears (N. by W. ½ W.), distant 8½ miles, and from their south-eastern edge (in 9 feet water,) (N. 37° W.) about the same distance. The Outer Shoals, like the Diamond, are steep-to, and will require care when sailing round them; but there is a good passage, nearly 3 miles wide, of 4 to 6½

* It should be borne in mind that all bearings thus (N.W. ¾ N.) are *true*. The variation at present (1850,) is only 40′ to the eastward.

fathoms, fine grey sand and broken shells, between them and the Diamond, to pass through which from the northward and eastward, bring the lighthouse to bear (West), in 10 to 9 fathoms water, about 4¼ miles from it, and run South until the water shoals to 7 or 8 fathoms, and the lighthouse bears (N.W. ½ W.), when you may run (S.W.) maintaining a depth of not less than 4 fathoms through the channel, and deepening gradually to the south-western edge of it, until in 7 or 8 fathoms, with the lighthouse bearing (North).

In approaching the channel between the Outer Shoals and the Diamond, from either the southward or westward, bring the lighthouse to bear (North), in a depth of 8 to 7 fathoms water when you will be in about 4¼ miles from it, and should run (N.E.), until you get into a depth of 8 to 9 fathoms water, with the lighthouse bearing (N.W.), when the shoals will be cleared.

To clear the Outer Shoals, in approaching from the northward and eastward, bring the lighthouse to bear (West), in 12 to 10 fathoms water, then run (South), keeping in not less than 10 fathoms water, until the lighthouse bears (N.W. ½ N.), when any course south of West may be steered with safety. In coming from the southward and westward, keep in not less than 10 fathoms water, until the lighthouse bears (N.W.), when any course eastward of North may be steered. In bad weather, and especially at night, do not approach these shoals nearer than 15 fathoms water from the northward and eastward, and 12 to 11 fathoms from the southward and westward. It is necessary to watch the bearings of the lighthouse, and keep the lead going in beating around or between the shoals. In approaching the shoals at night, or in bad weather, if the lighthouse has not been seen before night, it will not be prudent to run for it. As 10 or 11 fathoms water may be found to the westward of the shoals, in going outside of them from the southward and westward, do not approach the land to the southward of the cape nearer than 8½ to 10 miles.

Should you be near the lighthouse and be prevented from sailing round the Outer Shoals, which at all times is most expedient, particularly if you have a large vessel, you may sail between the Diamond Shoal, and the shoal extending from the cape. If from the northward and eastward, bring the lighthouse to bear (N.W. by W. ½ W.), in 8 to 7 fathoms water, 2½ miles distant, and steer (S.W.), giving the end of the shoal and breakers a berth of half a mile. On this course not less than 3 fathoms will be found. When the lighthouse bears (N.), in 5 to 6 fathoms water, the Diamond will be cleared, and when the lighthouse bears (N.N.E. ½ E.), in 6 to 7 fathoms water, the shoal off Cape Hatteras will be cleared, and the anchorage in Hatteras Cove, immediately to the westward of the cape, will be opened, into which you may run, and obtain good anchorage in from 4½ to 5 fathoms water.

To pass between the Diamond and the shoal running off the cape, from either the southward or westward, bring the lighthouse to bear (North), in 5 fathoms water, when you will be about 2 miles from the breakers near the cape, and may steer (N.E.) through the channel, until you get into a depth of 9 to 10 fathoms water, when the shoals will be cleared.

The currents over and in the vicinity of the shoals, have a velocity of 3 to 5 knots per hour, and are greatly influenced in direction and force by the winds. The surface water of the Gulf Stream extends to within a short distance of the Outer Shoals, for some time after a continuation of northerly and easterly winds.

It is high water here, F. and C., at about 8 o'clock, and the tide rises from 4 to 5 feet; but with easterly winds several feet higher.

Hatteras Cove lies immediately to the westward of the cape, and is a good place to which a small coaster may run as a harbour of refuge, but the protection is only from the northward and north-westward, it being exposed to all points between South and W.N.W. The anchorage is in 5 to 4½ fathoms, at about two-thirds of a mile from the north shore, with the point of the cape bearing about E.S.E., on a bottom of hard sand, with occasionally a little blue mud. To enter this cove from the southward and westward, bring the lighthouse to bear N.E. by N. ¾ N., and run for it. If from the northward and eastward, cross the shoals as previously directed. If from the outside of the shoals, keep in 12 fathoms water until the light bears N.N.W., when you may steer N.W. until the light bears N.E. by N. ¾ N., and then may steer for the anchorage as before directed.

Should you be obliged to beat into Hatteras Cove, you must go about, on approaching the western shore, or standing in towards the shoal extending from the cape, or getting into less than 4 fathoms water.

Hatteras Inlet.—Following the coast from Cape Hatteras southward, at about 12 miles W. 20° S. or W. by S. $\frac{3}{4}$ S. from Cape Hatteras Lighthouse, is an opening in the land into Pamlico Sound, named Hatteras Inlet, which may be easily known by a remarkable round hummock, covered with trees, on the east side of the entrance. On either side of the entrance are breakers, which seldom make right across; between them is the channel. The bar should be approached from the northward and eastward. Keep in from 4 to 5 fathoms water along the breakers, until up with the opening. The course in is W. $\frac{1}{2}$ N., for three-quarters of a mile, until you get into from 26 to 28 feet water, when the course up is N.N.W., for seven-eighths of a mile, passing to the westward of the breakers off the eastern point of the inlet, to the anchorage just inside of the sand-spits, which are bare at low water, and show at all times distinctly.

In consequence of the narrowness of the channel, great precaution is necessary when running in, and the lead should be constantly used. A pilot is at all times requisite, who can be obtained on showing the usual signal.

OCRACOCK OR OCRAKOKE INLET.—At about 24 miles W.S.W. from Cape Hatteras is Ocracock Inlet, which leads into Pamlico Sound. On the eastern side of the inlet is a lighthouse, 75 feet high, showing a light revolving every two minutes, which is visible in clear weather at a distance of 18 miles.

Pamlico Sound is much resorted to by the coasters bound to the several ports of Bath, Washington, and Newburn, but it is too much impeded by shoals to allow any but those well acquainted to run in without a pilot. On most of the shoals are buoys or lightvessels, but as their position is frequently shifted, a description of them is unnecessary.

It may be mentioned that Cape Hatteras Light is visible at a considerable distance without the Outer Shoals, and to a vessel steering for Ocracock W. by N., W.N.W., or even N.W. by W., will first show, and continue to be seen, until the light appears within the bar.

Albemarle Sound has several lights and lightvessels on the shoals which are scattered about it. It is visited only by coasters, and all others must take a pilot.

Among the various rivers on the north side of Albemarle Sound is the Pasquotank, a broad stream leading to Elizabeth. The shores on either side are lined by a bank of 3 to 4 feet, extending but a short distance off, so that the only material obstruction to the navigation of the river is a bar of 7 to 9 feet which runs off Wade's Point, the western side of the entrance, and extends almost across the river, leaving a channel about a mile wide between its extremity and the eastern shore. This channel has a depth of 11$\frac{1}{2}$ to 14 feet, which depth decreases but little all the way to the city, and you may anchor in any part of the river, as it is a good harbour. The end of the bar is marked by a lightvessel, so that there is but little danger if attention is observed. If drawing 7$\frac{1}{2}$ feet or more, and bound up the river, you shall pass to the eastward of the lightvessel. When up with it and near it, steer N.N.W., until Pococson Point bears due East, when you may steer N.W. $\frac{1}{4}$ N., until Brick-house Point bears due West, then keep in the middle of the channel, giving Cobb's Point a berth to avoid a short spit extending off it in a N.E. direction.

It should be observed that the depth of water in the Pasquotank River and Albemarle Sound depends in a great measure upon the supply furnished by the streams, and also upon the direction, force, and duration of the wind. At the entrance of the river southerly winds increase the depth of water, and northerly winds diminish it; but on an average the depths vary only 2$\frac{1}{2}$ inches with either wind. At the time of the survey of the river the greatest height of the water was with the wind at southward or westward, and exceeded the least height, which was with the opposite winds, by 2 feet 3$\frac{1}{2}$ inches.

CAPE LOOKOUT.—At the distance of 22 leagues from Cape Hatteras, in a S.W. by W. direction, is Cape Lookout, on which is a lighthouse, 93 feet high, showing a fixed light at about 100 feet above the sea, visible 18 miles. The building is painted in horizontal stripes, alternately red and white, and at a distance is said to resemble a ship of war with her sails clewed up. It is said that in the night time this light can occasionally scarce be seen, in consequence of the mist which rises from the land, and envelopes it. This light is visible to the extremity of the Cape Shoals, but vessels passing are recommended rather to trust to the lead, than to making the light. Cape Lookout is estimated to be in lat. 34° 37′ N., and long. 76° 33′ W.

The shoals from Cape Lookout extend 3$\frac{1}{2}$ leagues in a S.S.E. direction from the lighthouse, the broken ground extending to lat. 34° 28′: in this parallel are 12 fathoms

water, and thence to the Gulf Stream the soundings gradually increase to 95 fathoms. The outer part of these shoals lies S.W. ¼ W., 22 leagues, from Cape Hatteras, and at the same distance S.W. ¾ W. from the outer part of Cape Hatteras Shoals.

At about 7 miles S. ½ E. from the lighthouse is a patch of the shoals that dries at low water, off the south-east side of which the sea constantly breaks for a distance of 2 miles; this is the S.E. point of breakers. There are numerous spots, of 1½ and 1¼ fathoms, between this patch and the shore, and to the southward of this shoal the least water is 2½ fathoms. There are 2½ fathoms on the eastern part of Cape Lookout Shoals, and near them, on the southern and northern sides, are 4, 5, and 9 fathoms. There are 7 and 8 fathoms, dead, dark, broken shells, with sand, on the north and east sides of the shoals.

BEAUFORT HARBOUR.—At about 8½ miles, W.N.W., from the outermost shoal of Cape Lookout is the entrance to this harbour, which can be entered with the wind from all points, except west and north-west, carrying in 17 feet, and 3¼ fathoms, low water neaps. This harbour is easy of access, and affords perfect shelter from all winds.

On making Fort Macon (on the western side of the entrance), the breakers on each side of the entrance will be distinctly seen. Enter mid-way between the breakers, or with the last western hillock on Shackelford Point 1° 28′ open to the left of Fort Macon, and, if flood tide, approach without fear, the western or bar breakers, steering W. by N. ¼ N., 1¾ mile, or until the extreme north-west hillock on Shackelford Point is about two oars' length open to the left, or westward of a slim white spar in Beaufort. Then steer N.W. ½ N., following the bar breakers, until Beaufort spire bears N. 2° 28′ E., when haul up N.W. by N. ¾ N., rounding Point Macon in 6, 7, 5, and 4 fathoms water, and anchoring off the wharf in 3½ fathoms, good holding-ground, mud and sand.

Entering on the ebb, give the bar breakers more of a berth than when flood. The ebb sets strongest through mid-channel, yet with considerable force over the bar. The flood over the bar sets strong to the northward, and is apt to carry a vessel on the Middle Ground. In leaving, the same precautions are to be observed.

Should a vessel get ashore on the Middle Ground, if ebb, carry out a bower anchor with long scope to channel without delay, for on the flood nothing can be done on account of the swell and strong current; besides, with the flood, the sand is shifting on the Middle Ground, and will not hold the anchor. If grounding on the flood, wind the vessel, if practicable, and let go an anchor to keep head to channel, as nothing further can be accomplished until the the tide shoalens.

Pilots can be obtained by setting a signal at the fore. Vessels should heave-to off the S.E. spit in 4 fathoms, convenient for entering when boarded by the pilot.

The Slue should never be attempted by strangers. As many as 9 feet at low water, neap, can be carried in the channel winding near to the beach on Macon Point.

The following description of the tides at this harbour, from observations at Fort Macon, from Dec. 4, 1849, to Jan. 4th, 1850, are taken from the U.S. Coast Survey:—

" Corrected Establishment	7h. 46m.
Rise of highest tide observed, above the plane of reference	3.2ft.
Fall of lowest tide do., below do.	0.8
Fall of mean low water of spring tides below do.	0.6
Mean rise and fall of tides	2.3
Do. do. of spring tides	2.9
Do. do. of neap tides	2.2
Mean duration of rise	5h. 30m.
Do. do. of fall	6h. 44m.

From Cape Lookout to Cape Fear, the bearing and distance are S.W. by W., 27½ leagues. Between the two capes there are islands all the way along shore, divided only by shallow inlets; of these latter the principal is Bogue Inlet, lying to the westward of Cape Lookout, at the distance of 9 leagues, W. by S., from Beaufort Harbour, and has over its bar never less than 8 and 9 feet of water; within you will see a river a-head of you, and on its western bank the town of Swansborough. New River Inlet is 4½ leagues to the westward of Bogue Inlet, and has 8 feet water, and, therefore, only to be used by small craft. New Inlet is the last of these, and is situated between Smith's Island and Federal Point.

CAPE FEAR is the south-east extremity of Smith's Island, which forms the two entrances of Cape Fear River and the Port of Wilmington. Near Bald Head, the western extremity of the island, is a lighthouse, showing a fixed light upon the eastern

side of the southern inlet, and there is another upon the north side of the New Inlet, at 3 leagues north from the extremity of the Cape.

A little to the northward of Cape Fear is the *New Inlet of Cape Fear River*, leading to the Ports of Brunswick and Wilmington. On the northern point of the entrance, name Federal Point, is the lighthouse, previously mentioned, which is painted white, and shows a small fixed light at a height of about 40 feet. There are two channels through this inlet, but which strangers should never attempt without a pilot.

The *North Bar* of New Inlet, on which are 10 feet at low water, and 12 feet at high water, may be cleared by bringing the west end of Buzzard's Bay sandy point on with H. Kelly's large white house, in Smithville, bearing S.W. by W., at the same time keeping the point of Smithville with these bearings until over the bar, and thereafter keep the pit of sand extending from the lighthouse close on board. This course will carry you into the river channel, where good anchorage may be obtained along the sand, in 3 and 4 fathoms water.

The *Old or South Bar* of New Inlet may be cleared on entering, by bringing the lighthouse on Federal Point to bear W., or W. by S., when you will see a thick and high hummock, covered with trees, named Merrick's Wood Bluff. Should the lighthouse be seen bearing to the northward of west, you will make it and the bluff at the same time. The former may be seen, in clear weather, from a ship's deck, about 15 miles, or when you are in 10 or 11 fathoms water; at first it appears like a distant sail. On approaching the lighthouse the depth gradually decreases. The anchorage is good, and the ground soft, in from 4 to 5 fathoms water, at $1\frac{1}{2}$ mile from the lighthouse, bearing W.S.W. to W. When you are running in, bring the lighthouse on with the south end of the barracks, which will lead over the bar, near the beach, and so along the beach, until you arrive within the river. At high water you will have from 11 to 12 feet over the bar; but at low water there will not be more than 6 feet.

The above directions for the New Inlet were written some years since; but it is proper to mention that the bars are subject to alterations, so that they may not be correct for any length of time; consequently a pilot will be necessary.

The *shoals* off Cape Fear extend in a S.S.E. direction about 11 miles, where a swash-way, half a league wide, divides their southern extremity from another dangerous bank, named the Frying Pan. The latter is nearly $2\frac{1}{2}$ miles in extent; and its southern part, which is very steep-to, is nearly 5 leagues, S.S.E. $\frac{1}{2}$ E., from the southern extremity of Cape Fear. In the passage between the Frying Pan and Cape Fear Shoals, the depths are from 5 to 7 fathoms; and to the E. by S. of the Frying Pan are regular soundings for $2\frac{1}{2}$ leagues, 8, 7, 6, and 5 fathoms; fine sand, with black specks and broken shells. It has been recommended to strangers, on passing the shoals in a dark night, not to venture to the northward of 33° 25′. The south side of the Frying Pan lies in 33° 36′ N., and 77° 50′ W.

It has been remarked by Captain Walker that "When near the latitude of Cape Fear, you should keep a man at the mast-head, in order to descry the breakers on the shoals before you see the land, which we call a good land-fall; and, if you are bound in, come no nearer than in 8 fathoms. I have made the breakers bearing S.W., and I steered S.S.E., which course kept me in the same water until I got to the southward of the shoal; then the water deepened to 10, 12, and 14 fathoms. There is a very great flat all round the south end of the shoal, and above 2 or $2\frac{1}{2}$ leagues from the breakers, having 4, 5, and 6 fathoms of water on it. When you are round, and to the southward of it, you may haul up by your lead, to make the land; but come no nearer than in 7 fathoms, as the tide of flood sets to the northward within the shoal.

"The first land you will see is the Bald-Head, which is the highest land, and on the east side of the entrance of Cape Fear Harbour: it appears high and round, with reddish sand below the trees. To anchor on the outside of the bar, bring Bald-Head N.E., and in 8 fathoms of water, and you will have good holding-ground; but should you bring it any farther to the northward than N.E., you will be in foul ground. If the wind be at N.E., or to the eastward of N.N.E., do not come to an anchor, unless you mean to run over the bar, which you cannot do without a pilot, as the sands are so often shifting; nor by any means attempt to get under weigh whilst the tide of flood runs, unless you have a pilot to carry you in over the bar. The flood sets N.W. by N."

The currents on the coast between Capes Fear and Hatteras vary with the winds, as during the summer, when the prevailing winds are south-westerly, the currents sets in the direction of the coast to the eastward; but, when the southerly wind ceases, it sud-

denly changes, and this change has been frequently observed even before the change of wind.

CAPE FEAR RIVER, immediately to the westward of the cape, is the largest and most important river in North Carolina, and has a north-west course for about 300 miles. It affords 9 to 11 feet water to Wilmington, a distance of 34 miles, and boat navigation to Fayetteville, 95 miles farther.

The principal channel into this river lies between Smith's Island on the east, and Oak Island on the west side: Bald-Head is the western bluff of Smith's Island, and on it stands Cape Fear Lighthouse.

The following instructions for approaching the *Main Bar* of the river were written by Captain Burch:—Vessels running down from the westward, should not approach nearer to the Middle Ground* than to bring the cape (which is the most eastern part of Bald-Head Woods) to bear E. by N.; and when you have brought the lighthouse to bear N. $\frac{1}{2}$ E., and are in 4 fathoms water, you should steer immediately for it, which will then be a little open to the eastward of a pole-beacon, with a cask at the top, painted black. Continue this course, and you will clear the Fingers, and see a buoy a-head, or a little on your port bow; leave this to the port hand, and so soon as you pass the buoy, steer N.W., keeping the breakers close on board on your port side, when you may bear away according as the water deepens or becomes more shoal. You will by so doing go clear of a long sand-shoal, which makes off the point of Bald-Head, which would be dangerous to ground upon, as the flood tide sets directly over and breaks upon it with S.W. winds. Be careful how you approach Bald-Head, as the shoals on both sides are steep-to, and there will frequently be from 6 to 3 fathoms at one cast of the lead. Keep close to the shoal, by your soundings, until you reach Oak Island, when you may steer directly for Smithville. There is good anchorage, on soft ground, on the outside of the bar, with 5 to 18 fathoms water, the lighthouse bearing North; and the sea is seldom so rough as to prevent the pilot boarding you at the buoy. On the bar at low water there are 10 feet, and at high water about 14$\frac{1}{2}$ feet.

Oak Island Channel is the small or western channel into Cape Fear River, it being divided from the main channel by the Middle Ground. To enter the river by this channel, you must bring the point of Oak Island to bear N.E. by E., and keep this course, until you get close into the beach, and then proceed along the beach until you are past Oak Island. There are 7 feet at low water, and 11 feet at high water upon the bar. Or, with a vessel drawing not more than 9 feet water, and running in for Wilmington, you should bring the easternmost part of the clump of trees on the east end of Oak Island to bear N.E. by E., and steer for it, by which you will be carried over the bar in the deepest water; this should not be attempted until the flood has somewhat risen; so soon as you deepen your water, and are over the bar, you may steer for the sandy end of Oak Island, keeping on until you get into it, then steer E.S.E. for opening Cape Creek, when you will have 4 fathoms; haul up N. or N.N.W. along the beach until you reach Fort Johnson, where anchor.

When sailing towards these coasts, it is prudent to keep nearly a degree to the southward of the latitude of the place you intend to make, until you consider yourself to be on the edge of the Gulf Stream when you must be directed by your judgment, according to circumstances. If possible to avoid it, you should not sail to the northward of lat. 33° 20′, or, at the highest, lat. 33° 25′, until you get into 10 fathoms of water, in which depth you will be within the south or outer end of Frying Pan Shoal. In approaching the coast, in lat. 33° 20′, your first soundings will be from 30 to 35 fathoms, when you will be very near the inner edge of the Gulf Stream. When you get into 17 fathoms, you will have fine grey sand, with black spots, and these soundings are maintained for a considerable distance. In steering to the westward you will, for the first 5 or 6 leagues, shoalen the water very little. When you come into 14 fathoms, you shoalen your water quicker, but gradually. You will see the land from 10 fathoms water, if the weather be clear, and may then be sure that you are within the Frying Pan, from the outside of this shoal. To the westward of N.W. no land can be seen, when without the shoals.

Between Cape Fear and Winyaw Harbour the coast forms Long Bay, in which are several inlets: Lookwood's Folly Inlet at about 11 miles to the westward of Cape Fear light; Little River Inlet (dividing N. from S. Carolina,) still farther westward; and

* The Middle Ground on the port hand, and the Fingers on the starboard side, show themselves very plainly by the breakers.

North Inlet to the northward of North Island, and about 9 miles from Georgetown Lighthouse. All these are too shallow to be visited by any but coasters.

In front of Long Bay is a bank, named the Five-fathom Bank (from its general depth), which lies nearly parallel to the shore. The north end of this bank lies W. by S., 7 leagues, from Cape Fear, and extend thence S.W. ½ S. The inner edge of this bank is about 10 miles from land, and near it are 10, 9, and 8 fathoms of water, shoaling gradually thence to the shore and to the southward. Near the north end of the bank there is a depth of 10 fathoms, and along its S.E. side are 8, 7, and 6 fathoms. The southern part of this bank expands and forms the base of several extensive shoals, lying off Winyaw, or Georgetown River, and here its outer edge, of 5 and 5½ fathoms, is 5 leagues from the land. Continuing farther South and S.W. the flat is diversified with the shoals of St. Roman, &c.

GEORGETOWN OR WINYAW HARBOUR.—The entrance to this harbour lies between 60 and 70 miles, S.W. ¼ W., from Cape Fear. At the entrance is a lighthouse, which stands on a sandy beach, at the southern point of North Island: this lighthouse is a lofty circular white tower, exhibiting a fixed or steady light at 89 feet above the level of the sea, and, from the entrance of the bar, bears N. ⅓ W., distant 6 miles.

The North Inlet of Georgetown is 2½ leagues to the northward of the lighthouse; but in no instance, and under no circumstances, is it to be recommended to strangers.

The Eastern Bank, off Georgetown Harbour, which is the outer shoal, lies about 1½ mile to the eastward of the range of shoals lying off the entrance, and 6 miles from the land; it has only 7 feet on its shoalest part at high water, and 5 fathoms all round; and from its north end the lighthouse bears S.W. ½ W., 11 miles, and from the south end, W.N.W., 7 miles. The main entrance of the harbour lies to the southward of this shoal; and vessels drawing 7 or 8 feet may enter at half-tide, by bringing the lighthouse N.W. by W., and running for it in that direction.

In approaching the harbour from the northward, the entrance is completely hidden from view by North Island, and the lighthouse will appear to be situated in a low wood. In passing the light with a northerly or southerly wind, you will have 5 fathoms within 5 miles of the land, between the banks.

Small vessels drawing from 7 to 8 feet of water may venture in, at near high water, by the bearing of the lighthouse, and running for it until within 100 fathoms of the land: thence they will have deep water, on both sides, for several miles up the bay. There are several spar-buoys in the entrance, to mark the best water, and, in sailing by these, the following directions may be observed:—

The first buoy, which is on the bar, lies in the channel, and may be passed close-to, on either side; from this to the second buoy, also in the channel, the course is about N.W. one mile; having advanced thus far, steer immediately N.E. to the distance of half a league, which will bring you up to the third buoy in the channel, whence you steer N. by W. for the lighthouse, then 4 miles distant, and should keep that course until within 100 fathoms of the light, leaving which on the starboard hand, you will gain a good anchorage.

Vessels at sea will find deep water, and, with southerly or westerly winds, good anchorage near the land, at 1½ or 2 miles to the northward of the lighthouse. A common flood-tide rises nearly 4 feet, and it is high water on the bar about 7 o'clock, full and change. Between Georgetown entrance and the outer shoal of Cape Roman lie the entrances of Santee River: of these the southern one, which is the best, is about 2½ leagues, S.W., from the entrance of Georgetown River, and 3 leagues, N.E., from Cape Roman.

The coast to the southward of Georgetown consists of a cluster of small low islands, scarcely visible from the deck, and are bordered by some extensive flats, named the Shoals of St. Roman, which surround Cape Roman, and extend out a considerable distance (from 6 to 7 miles) from the coast; so that it is requisite when passing them to be cautious not to approach the shore in the vicinity of Georgetown nearer than a depth of 5 or 4 fathoms, or to Cape Roman than 7 fathoms. Although no danger need be apprehended while keeping in these depths, yet it will be prudent to make a frequent use of the lead.

When making the land on the parallel of Cape Roman, you will find a depth of 20 fathoms at the distance of about 40 miles to the eastward of the shoals, outside of which the water soon deepens to 30, 60, and 100 fathoms. When drawing nearer the land it is not unusual to shoal your water suddenly from 13 to 9 fathoms.

CAPE ROMAN is very low land, with neither tree nor bush on it, and appears, when

seen at a distance, to be a sand left dry by the tide. To the W. by S., about 2 miles, from Cape Roman, on the Great Racoon Cay, is a lighthouse which exhibits a strong red fixed light at 87 feet above the level of the sea: the tower is painted in horizontal stripes, alternately black and white. With the light bearing from N.W. by N. to N.E. by N., there is good anchorage on the flats, in 3 fathoms, to the east of the mouth of the inlet named Bull's Bay.

Bull Bay is about 23 miles to the northward of Charleston, and has lately (1849) been surveyed, from which it appears that 13 feet can be carried over the bar, at low water spring tides, the rise and fall of which are 6¾ feet. To enter, bring the north-east bluff, a point of Bull Island, to bear N.W. by W., and run for it, and when within three-quarters of a mile of it, steer N. ¾ W., until it is passed; then follow around the shore and anchor at pleasure in soft bottom. In leaving the bay, keep away until the outer spit is cleared, which bears S.E. by S. from the bluff part of Bull Island, distant 3¼ miles.

CHARLESTON HARBOUR.—The lighthouse at the entrance of Charleston Harbour bears S.W. ½ W., 31 miles, from that of Cape Roman; between are several low islands, the principal of which are named Bull's, Cooper's, Davies', Long, and Sullivan's Islands. Flats extend from all the islands, along which the soundings are regular. Bull's Island appears very bluff, with red sand-hills, and a spit from the outer end of it extends eastward, about 3½ miles: a spit named the Rattle-snake also extends to the distance of 3 miles, E. by S., from Sullivan's Island, which forms the north side of the entrance to Charleston, and you will be on the edge of it in 5½ fathoms. With Charleston Churches to the northward of Sullivan's Island, you will be on the edge of the Rattle-snake; and when the churches are open to the southward of Sullivan's Island, you are clear of that shoal. You should approach no nearer to this bank than in 5 fathoms water.

The entrance to Charleston Harbour is distinguished by a lighthouse erected on a low sandy point upon Morris's or Lighthouse Island; the lantern is 125 feet above the sea, and exhibits a revolving light, which may be seen 8 or 9 leagues off. When drawing nigh it, the time of darkness will be twice that of illlumination, and, as you approach, the period of darkness will decrease, and that of light increase, until you get within the distance of 3 leagues, when the light will never wholly disappear; but the greatest strength of the light, in comparison with the least, will be as 24 to 1. St. Michael's Church, at Charleston, is also an excellent mark, it having been painted pure white: it may be seen in clear weather nearly 7 leagues. There is also a small beacon on the same island which is lighted.

Off Charleston Bar there is good anchorage in 6 fathoms, with the lighthouse W. by N., 6 miles, and Sullivan's Island N.W. ¾ W., 7 miles.

Channels and their Buoys.—There are two white beacons on Morris' Island, which, when kept in range, will bring you to a buoy lying at the entrance of the *Overall Channel;* and by keeping the beacons directly on with each other, and steering for them until you strike 5 fathoms water, you may then direct your course to Sullivan's Island.

There are three buoys in the *North Channel*, which serve to direct you by running for the outer buoy, and leaving it on the port hand, thereafter for the middle buoy which you leave on your starboard hand, and then for the inner buoy which you leave on the port hand. The same water may nearly be found in this as in the Overall Channel, but the latter is to be preferred.

There is one buoy at the entrance of the Lawford Channel, which may be found by keeping the South Beacon (which is not lighted) open to the northward of the lighthouse about three handspike's length. Leave the buoy on the starboard hand at the distance of 50 yards, and steer N.N.E. to clear shoals on the port hand, until the lighthouse bears W.N.W., when you should direct your course to Sullivan's Island.

The *Ship Channel and Bar* lie between the north and south breakers, which will be seen as you approach. When standing in for the bar, you should bring the beacon on Lighthouse Island to appear a handspikes' length to the north of the lighthouse, and you will soon make the Bar Buoy, lying in 3 fathoms water, and which may be passed on either side. Nearly in the same range lie two other buoys; the first on the south point of the north breaker, and the other on the inner south point (or S.W. point) of the same breaker. These buoys are to be left on the starboard hand, at the distance of a ship's length. After passing the inner buoy, steer North or N. ½ W. (according as the tide is flood or ebb) for Sullivan's Island, keeping the two beacons on it in range until

you are up with the buoy off Cummin's Point, which you leave on your port hand. The course from the buoy off Cummin's Point is N.W. by N. to the anchorage in Rebellion Roads. You will clear the "Middle Ground," when mid-way between Sullivan's Island and the buoy off Cummin's Point, by steering for Fort Pinckney, keeping it a little on the port bow. As you approach the island you must give it a berth of 100 yards, and anchor off the city.

It is high water at Charleston at 7h. 15m.

The following orders and regulations for the Port of Charleston were in force some years since, and may probably be of use at the present day:—

"The harbour-master of the port shall keep an office at some convenient place, to which all persons having business with him may at any time repair, between the rising and setting of the sun; and in some conspicuous part of the said office he shall affix the regulations of the harbour, copies of which he shall cause to be furnished to each captain or commander of a vessel, immediately on his arrival.

"No ship or vessel shall be allowed to haul into any dock, or to a wharf, upon any pretence whatever, until her yards are topped, jib and spanker booms rigged in, and sprit-sail yards fore and aft, and such anchors as are not in use, on the forecastle deck, or such other part of the vessel as not to obstruct other vessels passing her sides.

"The harbour-master shall have full power and authority, and he is hereby required, to order and direct the anchoring and mooring of all vessels coming into port, as also to fix their proper berths, and, upon application, to order any vessel in ballast, light, or taking in cargoes at any of the wharfs, to slack their fasts, and give an inside berth to a loaded vessel; provided that, at the time of the application, there shall be no other berth vacant, or as suitable at the wharf in question, or at the adjoining wharfs; and that no loaded vessel be allowed more than ten days for the discharge of her cargo. It is further enjoined on the harbour-master to take care that no vessel be permitted to remain at anchor in the river, within the distance of fifty fathoms from the outermost vessel lying at any of the wharfs.

"If any captain, commander, or owner of any vessel, shall refuse to anchor, moor, or slack his fasts, as aforesaid, when required so to do by the harbour-master, it shall be the duty of the said harbour-master immediately, and without delay, to procure the necessary aid and assistance to anchor, moor, or slack the fasts of said vessel; and the expense thereby incurred to charge to the captain, commander, or owner thereof; and if the same be not paid within twenty-four hours after their being furnished with the amount, such charge shall be recoverable in the Inferior City Court, at the next term thereafter, with full costs, without the right of imparlance.

"The docks and channels of the harbour shall be under the direction of the harbour-master, who is hereby required to prevent any ballast or rubbish being thrown therein, and to keep the same open and free from obstructions; and every person or persons offending in the premises is, and are hereby made liable to be fined in the sum of twenty dollars for every such offence, with costs, to be recovered in the Inferior City Court, without the right of imparlance: and the harbour-master, as a compensation for his attendance to prosecute said suits, shall be entitled to receive one-half of all the fines so recovered; the other half to go to the use of the city; and the said harbour-master is hereby declared a good witness, in all cases, notwithstanding he may be the informer.

"If any person or persons shall molest or attempt to obstruct the harbour-master in the execution of the duties of his office; all and every such person or persons shall, upon conviction in the Inferior City Court, be liable to be fined in the sum of twenty dollars, and all costs attending the suit.

"The harbour-master shall be amenable for all such losses as shall arise through his neglect; and, upon his omitting to perform the respective duties assigned him by this or any other ordinance, he shall forfeit and pay, for the use of the city, the sum of twenty dollars for every such offence, upon conviction in the Inferior Court, with costs; and shall be liable to be dimissed at any time, for any cause or matter which, to the council, shall appear sufficient.

"The harbour-master shall take all lawful means to prevent negroes and other slaves being clandestinely or illegally carried away in any ship or vessel, from this port, and to secure them in the workhouse for the use of their owner, who shall pay a reward of 10 dollars to the harbour-master for every such negro or slave so secured as aforesaid; and every constable or constables aiding and assisting in the taking and securing such

negro, shall be entitled to receive from the owner aforesaid 5 dollars each; and, in case of refusal on the part of the owner, the parties shall recover the same in the Inferior City Court, with full costs.

To prevent paupers and others, who are likely to become a charge and burden to the community, from being brought into this city from any of the United States, or from any foreign country, every master of a vessel arriving at the port of Charleston, shall, as soon as he has entered his vessel with the collector of the customs, deliver to the master of the said port of Charleston, a perfect list or certificate, under his hand, of the christian and surnames of all passengers, as well servants as others, brought in such ship or vessel; and their circumstances, so far as he knows, noting their place of nativity, or residence, and their occupation or profession, and whether he considers such passenger or passengers as likely to become burthensome to the community; on pain of forfeiting the sum of 10 dollars for every passenger whose name he shall omit to enter in such list or certificate, to be recovered in the Inferior City Court, in the same manner as all fines and forfeitures have heretofore been recoverable. And should it so happen that any passenger or passengers so brought in, is or are likely to become a burthen to the city, if such person or persons shall refuse to give security, or cannot procure sufficient security or securities to become bound for his saving the city from such charge; in such case the master of the vessel in which such person or persons came shall, and he is hereby obliged and required to send him, her, or them, out of the city again, within the space of three months next after their arrival, or otherwise to give security to indemnify and keep the city free from all charge for the relief and support of such pauper or paupers, unless such person or persons was before an inhabitant of this State, or that some infirmity happened to him or her during the passage; and the harbour-master of the port of Charleston is hereby required to notify to all masters of vessels entering this port the purport of the above clause, free of reward.

The harbour-master shall have authority to appoint one or more deputies, to be approved of by the Intendant, who shall take the same oath of office as himself, and be subject to the same penalties for neglect of duty."

From off Charleston Bar, in 5 fathoms water, to North Eddisto Inlet, the course is S.W. by W. $\frac{3}{4}$ W., and the distance is $5\frac{1}{2}$ leagues. This course will carry you clear of the shoals which lie off Stono Inlet; and which lie further out than any other that are in your way to Eddisto.

Stono Inlet is about 2 leagues from the south channel of Charleston; there are two islands between, viz., Morris's Island, on which Charleston Lighthouse stands, and the island named the Coffin Land. With the lighthouse open of the Coffin Land, you will clear the Stono Shoals in 6 fathoms water; but, if you shut the lighthouse in with Coffin Land, you will not have more than $5\frac{1}{2}$ fathoms off Stono Shoals; you will pass close to the breakers, and consequently be in danger. You may know where the shoal is by the breakers, unless the sea be smooth. There are 9 or 10 feet at low water in Stono Inlet.

From Stono Inlet to North Eddisto Inlet, the course is S.W. by W. $\frac{1}{2}$ W., and the distance is 11 miles: the soundings between are regular, and shoalen very gradually as you come from the offing towards the shore. The bar of North Eddisto, and the shoals which are near it, lie off about 4 or 5 miles from the land; there are 3 and 4 fathoms water close to the bar and shoals, and on the bar 9 or 10 feet at low water.

Should you, through stress of weather, when bound to the southward or northward, be compelled to make a harbour in North Eddisto, you ought, when within 5 miles of the land, to open a tree (resembling an umbrella) with the south point of the harbour, and then steer in N.W., without any danger, and anchor in 6 fathoms water on the northern side of the harbour. The tide here is very rapid. Good water may be obtained in the harbour, at 4 miles to the westward of the anchorage.

ST. HELENA SOUND.—Between South Eddisto Island and the northernmost Hunting Island, lies the entrance of St. Helena Sound, which is about 2 leagues wide. This place is navigable for vessels drawing only 7 or 8 feet water: it is full of sand-banks, many of which are dry at low water. Six navigable rivers empty themselves into the Sound, viz., South Eddisto, Ashappo, Cumbahaw, Chehaw, True Blue, and Corsaw. Some of these rivers extend 200 miles up the country, but few of them can be navigated by vessels drawing more than 6 feet water, for more than 30 or 40 miles from the Sound. Inside the entrance a lightvessel is moored, except for a short time

during the summer months, with the north point of Hunting Island bearing about W. ½ S.*

In the vicinity of St. Helena a Captain Porter, of the Steamer *Georgia*, reported a shoal, on the 29th of March, 1850, which, on the 12th of April following, was sought for by Lieut.-Commander J. N. Mafitt, of the U. S. Navy, who in his report stated: "I started with the schooner Gallatin and tender from St. Helena bar, with the light-vessel bearing N. by W., and ran S. by E., 14 miles, keeping three leads going on board the Gallatin, and one on board the tender.

"The soundings deepened regularly from 4½ fathoms to 9 and 10; I then ran several close traverses back, increasing them in the position assigned to the shoal. The wind was fresh from the northward and eastward, with quite a heavy sea running, sufficient to have formed breakers on a 17 feet spot. For twelve hours this search was continued, only discontinued by bad weather coming on, which drove me into Savannah, crossing the bar on the 30th, in a heavy gale. I am of opinion that no 17 feet shoal exists in the position assigned by Captain Porter. He reports that at the moment of striking, heavy pieces of timber floated by; and as large rafts are frequently driven to sea from St. Helena Sound, it is not improbable that the Georgia may have struck on one of them."

From the entrance of St. Helena Sound, along the Hunting Islands, to the entrance of Port Royal, the course is about S.W. ½ S., and the distance is 5½ leagues. The depths are 5 or 6 fathoms, with regular soundings.

PORT ROYAL HARBOUR.—Ships from sea, for Port Royal Harbour, should get into the lat. of 32° 6′ N., then steer West for Michael Head, and when you come within 15 leagues of it, you will have from 20 to 25 fathoms water. Continue your course West till you make the land, which you will do, if the weather be clear, at the distance of 6 leagues, in 12 fathoms water: hereabout the land is low, with high trees upon it.

The entrance of Port Royal may be known by a small grove of trees standing on the north side of it, which rises above all the other trees, like a high-crowned hat: hence this grove is named the Hat of Port Royal. Continue to steer as before, keeping your lead going, until you get into 8 fathoms water, when you will be about 3 leagues from Michael's Head. You may then steer a point to the southward of West, until you get into 5 fathoms water, then more southerly, observing not to bring Michael Head to the northward of N.W. by N. until you see the great north breaker, named Coles' Care, close to which there are 4 fathoms water: leave this shoal on the starboard side. In approaching this breaker from the northward, you will see another breaker to the southward, named Martin's Industry; between these two breakers is the entrance of the channel into Port Royal Harbour, which is about a mile wide. The mark to go clear of the north breaker is "a parcel of high trees, which stand near the mouth of the River May, and appear like an island," kept just open of Elizabeth Point. Your course through between the two shoals is W. ½ N. or W. by N. In this channel there are not less than 3½ or 4 fathoms, at low water. Continue to steer, as aforesaid, between the two breakers, until you bring Philip's Point to bear N.N.W.; then steer directly for it, and you will have, as you proceed, 9, 8, and 7 fathoms water. When you are abreast of Philip's Point, give it a small berth, and steer up N. by W. ½ W., in 6 and 5 fathoms; in the latter depth you may anchor in a very safe harbour.

Between Martin's Industry and Gaskin Bank there is a channel named the South Channel, in which there are not less than 12 feet at low water. To go through this channel, when in 7 fathoms of water, bring Hilton Head to bear N.W. by N., and then steer, with an ebb-tide, N.W., and with a flood-tide, N.W. by N., until Philip's Point bears N. by W. ½ W.; you may then steer for the point, and proceed as before directed.

The east end of Joiner's Bank, lies about 3½ miles, S.E., from Hilton Head, and 4 miles, S. by E., from Philip's Point; and extends thence W.N.W., about 2½ miles, and has 3½ fathoms on it at low water. Hilton Head is on the south side of the harbour, and is the highest bluff point of land thereabout.

A lightvessel was moored off the harbour, in 6¾ fathoms at half-ebb, on Dec. 18th,

* Several vessels have touched the ground by mistaking this lightvessel for that on Martin's Industry. It should, therefore, be borne in mind that the St. Helena Lightvessel is moored five miles within the outer breaker in 4 fathoms, and that there are not 10 fathoms within 10 miles of her, which is out of the range of light. Within three miles of the lightvessel on Martin's Industry there are 10 fathoms. If sailing near St Helena Lightvessel (it is recommended not to approach too closely) great attention should be paid to the lead, and a good look-out kept for the breakers, as it is sometimes but indistinctly seen even by the Charleston steam-boats.

1840, between Martin's Industry and the north bank of Port Royal entrance, which shows one bright light, elevated 22 feet above the surface of the water, and distant from the nearest land about 8 miles. The bearings of the light are as follow:—North Point, Trench's Island, bears from it N.W. ½ N.; Bay Point N.W. by N.; Tybee Lighthouse, W.S.W., distant about 18 miles. Lat. 32° 7′ N., and long. 80° 34′ W.

The harbour of Port Royal is sufficiently deep and capacious to accomodate the largest fleets, but, like all the ports south of the Chesapeake, it is impeded by a bar at its entrance. From the outer edge of the bar, north-westward and northward to Beaufort, the distance is more than 20 miles. A bank, nearly 1½ mile long, from N.W. to S.E., and nearly dry at low water, prevents an access to the town of Beaufort, which stands on the east side of the river; but below it, to the south, the depths in mid-channel are from 1½ to 5 and 6 fathoms.

TYBEE INLET, the entrance of Savannah River, lies 5 leagues, S.W. ¼ W., from the entrance of Port Royal South Channel: between is Hilton Head Island. From this island the Gaskin Bank extends about 8 miles in the broadest part; you may proceed along this bank in 5 fathoms water. A lighthouse is on Tybee Island, at the mouth of the river, the lantern of which shows a fixed light at 100 feet above the sea, visible 18 miles. There is a beacon light, 10⅓ feet high, and 56 feet above the sea, about 600 yards to the E. ½ S. of it, and the two lights in one, bearing W. ½ N., was formerly the leading mark over the bar.

There are two large buoys off Tybee, one on the tail of the knoll, in two fathoms water, bearing from the lighthouse N.N.W., the other in 4½, bearing N.E. by N. from the lighthouse, in mid-channel, where large vessels may anchor with safety, when the wind and tide prevent them proceeding higher up.

The direct course over the bar is the beacon light open a handspike's length to the northward of Tybee Light. The best anchoring ground is with Tybee Light bearing from S.S.W. to South, the former to be preferred, and distant about one cable's length from the beach. On the bar is a buoy with a white top, in 4½ fathoms water, distant 4½ miles from the lighthouse. The deepest water is between the buoy and the south breaker head.

It has been recommended by those bound to Port Royal to make the land about Tybee, as the lighthouse makes that part of the coast more distinguishable than any other. Ships which draw 14 or 15 feet water may go in at Tybee, and proceed through land to Beaufort, in Port Royal Island; and thence, in vessels that draw 8 or 9 feet water, may go through land to Charleston; and from Charleston, in vessels of 7 or 8 feet water, may go through land to the River Medway, in Georgia.

SAVANNAH.—The lighthouse above-mentioned, on the N.E. point of Tybee Island, is about 13 miles from Savannah: on the bar there are 18 and 19 feet at low water, on the south breaker not more than 7 or 8 feet, and at a mile and a quarter from the lighthouse the ground is uncovered at low ebbs: on the north breaker there are not less than 12 feet of water, to the distance of a mile. The head of Stone Horse Shoal commences at the north breaker, and extends from the land about 6 or 7 miles.

With 4 fathoms of water you will be over the bar, and should then haul up W.N.W. until the lighthouse bears S.S.W. The best anchoring ground is with the lighthouse bearing from S.S.W. to S.; the former to be preferred, and distant about one cable's length from the beach.

The point of shoal running down from Cockspur Island, and separating that channel from the ship-channel, bears N. ½ W. from the light, and has not more than 5 feet on it at low tide. You may anchor in 4 or 5 fathoms, when to the northward of this point, with the light bearing S.S.E. A vessel not drawing more than 8 or 9 feet may keep the light or island side on board, and run into Cockspur and anchor, as they cannot pass the upper end of the island until half flood, there being only 7 or 8 feet at low tide.

At the entrance of the river are several buoys, but to run up to the port a pilot will be required, who can be obtained, if a fresh wind, just off the lighthouse, or in moderate weather, without the bar. If unacquainted you should not attempt Tybee Inlet without a pilot.

We may here observe that a survey is now being carried on, by order of the United States Government, of the whole of the coast of South Carolina. North Eddisto Inlet has been examined, and preliminary observations have also been made upon many of the other small ports, the results of which have tended to show that great changes have

taken place since this coast was previously examined. The instructions for entering these harbours must, therefore, not be too literally adhered to, and a pilot must always be obtained if possible, particularly as the channels into the inlets lie between shoals, and are subject to frequent changes by gales of wind.

Tides and Winds.—It has been observed that on this coast N.E., Easterly, and S.E. winds cause higher tides than other winds, and also somewhat alter their course. At Port Royal entrance the tide flows, on the full and change of the moon, at a quarter past 7 o'clock. About 6 leagues from the land, in 12 fathoms water, the flood sets strongly to the southward, and the ebb to the northward; at a great distance from the shore there is no tide at all. Near to the entrance to the harbour there is a strong indraught during the flood tide, and an outset with the ebb tide.

If the wind blows hard from the N.E. quarter, without rain, it commonly continues so for some time, perhaps three or four days; but if such winds are attended with rain, they generally shift to the E., E.S.E., and S.E. South-east winds blow right in on the coast, but they seldom blow dry, or continue long; in 6, 8, or 10 hours after their commencement, the sky begins to look dirty, which soon produces rain. When it comes to blow and rain very hard, you may be sure the wind will fly round to the N.W. quarter, and blow hard for 20 or 30 hours, with a clear sky.

N.W. winds are always attended with clear weather, they sometimes blow very hard, but seldom for longer than 30 hours. The most lasting winds are those which blow from the S.S.W. and W.N.W., and from the N. to the E.N.E. The weather is most settled when the wind is in any of these quarters.

In summer time, thunder-gusts are very common on this coast; they always come from the N.W. quarter, and are sometimes so heavy that no canvass can withstand their fury: the come on so suddenly that the greatest precaution is necessary to guard against the effects of their violence.

River Ogechee.—Hossaba or Ossabaw Sound forms the entrance of this river, and its bar bears S.W. by S., distant 5 leagues, from Tybee Lighthouse: the bar has over it about 18 feet water, and extends out to sea about a league. Green Island is situated up the river, and serves as a mark, its land being higher and its trees taller than any other in the neighbourhood. To cross over the bar bring Green Island to bear N.W. by W., and steer in W. by N., until the water deepens; then haul up N.W. by N., and you will soon gain 8 or 9 fathoms, when your eye, with the lead, will be the best guide

St. Catharine's Sound, or the entrance of the Port of Sunbury, which is a port of entry, lies about 30 miles to the south-westward of Tybee Inlet, or the entrance of Savannah River. It is barred, but, when within, capacious and safe, there being sufficient water for large ships. The entrance is, however, difficult; for the bar, which is a mile south of the north point of St. Catharine's Island, has only $8\frac{1}{2}$ feet on it at low tide, while the channel is not more than 200 yards wide, and the shoals on each side are commonly uncovered. Vessels bound to Sunbury, &c., have, therefore, been directed rather to enter at Hossaba, to the north, or Sapelo, to the south, and go by the inland passage, than to attempt St. Catharine's Sound.

Doboy Sound or Inlets.—This sound or inlet leading to Darien lies immediately along the south side of Sapelo Island: the Pelican Shoals, which stretch from Sapelo Island, border the channel on the north side.

A lighthouse is erected upon the south end of Sapelo Island, and in order to distinguish it from all others on this part of the coast, it is painted in horizontal stripes red and white, which gives it, in day time, the appearance of a vessel with her sails clewed up. The lantern is elevated 74 feet above the level of the sea, and shows a revolving light, which completes its revolution every five minutes; during which period, the greatest power of light and total darkness will be produced three times, each alternately, at any distance between 10 miles and 8 leagues. Within the distance of 3 leagues, the light will not totally disappear; but the greatest strength of light, compared to that of the least, will be as 40 to 1.

On Wolf Island, are also two beacon-lights; the western or highest of which is painte *white*, and the light is 25 feet above the surface. The eastern beacon is painted *black*, and is 15 feet above the surface. They are erected on the east side, and nearly on the north end of Wolf Island, in a S.S.E. direction from the lighthouse on Sapelo Island. So soon as you have crossed this, the direction is to haul one point to the northward for half a mile, then steer N.W. by W. for the lighthouse on Sapelo, taking care to keep nearest to the Pelican Bank, or the breakers, on the starboard hand. Abreast of the lighthouse there is good anchorage, in 4 fathoms, at half a mile from shore.

In approaching Doboy Bar, when you are in 5 or 6 fathoms, if the weather should be clear, you will see the beacons on Wolf Island, which bring to bear W. ½ S.; run on exactly in this course until you get near to the outer buoy, which pass on either side; continue on until you get near to the inner buoy, which lies opposite to the north breaker; by so doing you will pass the 8 feet knoll, leaving it to the starboard. In passing them, the north breaker must be kept on the starboard and the buoy on the port hand, taking great care that the flood tide does not set your vessel upon the north breaker: the bar will thus be passed in not less than 12 feet water. When abreast of the inner buoy, steer N.W. by W., one mile and a half, and you will find good anchorage, in 4 fathoms, in the vicinity of the lighthouse. Hence, as convenient, you may proceed 2 miles higher to the lighthouse, where the depths are 3½ and 4 fathoms: or to the mouth of the River Darien, two miles above the lighthouse, where there are the same depths. Neap tides here rise 7½ feet.

You may, after making the light on Sapelo Island, cross the bar in 13 feet water, or at neap-tide ebbs 7 feet, by steering directly for the beacons on Wolf Island, bringing them in a line, and keeping the lead constantly going; the lighthouse bearing W. ½ N.

The following are the distances and bearings of the two buoys:—Buoy No. 1 is in 18 feet at low water, and lies on the outer edge of the bar, bearing from the beacon on Wolf's Island, E. ½ N., distant 3¾ miles; and E.S.E. from the S. point of Sapelo, distant 4½ miles. Buoy No. 2, is in 21 feet water, and lies off the north breaker head, bearing E. ½ N. from the beacon before mentioned, distant 2½ miles, and S.E. by E., distant 3½ miles, from the S. point of Sapelo: this buoy bears S.E. by E. ½ E., 5½ miles, from Doboy Island, and one-third of a mile, W. by S. ½ S., from the most southern part of the north breaker.

ST. SIMON'S.—In proceeding from Tybee for St. Simon's Bar, bring Tybee Lighthouse to bear N.W. in 10 fathoms water; a course S.W. by S., 21 leagues, leads to St. Simon's Bar. The shore of the several islands which lie between them is flat, and the soundings, as you approach, are gradual.

Between St. Simon's and Jekyl Islands (whose breakers appear white, and are, therefore, remarkable,) is St. Simon's Sound. The former island, which lies on the northern side, may be easily known by four trees standing thus ††††, and the latter, lying on the southern side, is distinguished by some remarkable trees resembling umbrellas, and these are named umbrella trees. On the south end of St. Simon's Island there is a lighthouse 75 feet in height, containing a fixed light; and to the E.S.E. of the island a shoal lies off to the distance of 6 miles.

The bar at the entrance of St. Simon's Sound lies 6 miles from the lighthouse, and on it there are two buoys, the least water between which is 3½ fathoms: the northernmost is coloured black, lies in 2½ fathoms at low water, and bears from the light S.E. by E. ½ E. at a distance of 6 miles; the southernmost is coloured white, is situated in 3 fathoms water on the N.E. point of the south breaker, and bears S.S.E. from the black buoy, at the distance of 1¼ mile. A shoal ground, named the Middle Ground, lies within the bar, and has on its northern side a black buoy bearing from the lighthouse S.E. by E. ½ E., 4 miles distant.

Vessels approaching the bar, should endeavour to get the black buoy on the north breaker to bear W.S.W., and run for it, passing it at two cable's length, leaving it on the starboard hand. When abreast of it haul up W.N.W., the channel course, to pass the Middle Ground, leaving the buoy on that shoal to port, giving it a good berth. Then steer W. by N. to pass the light; upon passing which, the vessel is in safety in 10 fathoms water. The shoalest soundings in the channel are 3½ fathoms at low water. By these directions any vessel drawing less than 17 feet can come into port at dead low water.

The tides, on the full and change of the moon, are as follow:—In the sound, nine o'clock; on the bar, half-past seven; and in the offing three-quarters after six o'clock. The flood, along shore, sets S.S.W., the ebb E.N.E. Ordinary tides rise 6 feet.

ST. ANDREW'S SOUND may be distinguished by a fixed light, from a building 53 feet high, on the north end of Little Cumberland Island, lying on the southern side of the entrance.

The following sailing directions for entering St. Andrew's Sound are given by Lieut.-Com. Rodgers, of the U. S. Navy:—

"*To run in by the buoy.**—Keep in not less than 6 fathoms water until the ligbthouse

* "Note the buoy is said to be insecurely moored and it is proposed to move it."

bears by compass W. by N. ¼ N., then steer for the lighthouse until the buoy comes in sight. Keep it and the lighthouse in range until up with the buoy, which should be passed close to either side. Then steer N.W. by W. ¼ W. until the lighthouse bears W.S.W. Haul in for the anchorage under the N.W. end of Cumberland Island, and anchor where convenient.

"*To run in by the Compass.*—Keep in not less than six fathoms water until the lighthouse bears, as above, W. by N. ¼ N., then steer for the lighthouse. When the south point of Jekyl Island bears N.W. ½ W., steer N.W. by W. ¼ W. until the lighthouse bears W.S.W. Then haul in for the anchorage under the N.W. end of Little Cumberland Island, and anchor where convenient.

"High water near Cumberland Lighthouse, in St. Andrew's Sound, 7h. 55m., at full and change. The only spring tide observed rose 7 feet."

Satilla River empties into St. Andrew's Sound. Crow Harbour lies up the river about 30 miles, and is a great timber depot. At about 15 miles above Crow Harbour is the Town of Jefferson, where there is room for vessels drawing not more than 12 feet.

ST. MARY'S SOUND.—The entrance of St. Mary's Sound and River is situated about 8 leagues, S.S.W., from St. Simon's Bar; in which distance a depth of from 5 to 6 fathoms may be found. The north side of the entrance to St. Mary's River is formed by the south end of Cumberland Island, and the southern side is formed by the north end of Amelia Island, on which there is a lighthouse, 50 feet high, exhibiting a revolving light.

When coming from the northward, it is recommended that vessels, after passing Jekyl Island, which lies in lat. 31° N., should keep in 7, 6, or 5 fathoms water, as the weather and the size of the vessel may permit. As you proceed towards the southern part of Cumberland Island, you will open *Dungeness House*, which is about 1¾ mile distant from the south point of the said island, and is the only conspicuous large building on this coast, and is hid by trees when you are to the northward. Southward of this house there is a space of about two miles, with no trees on it, which makes the south point of the island appear at a distance like an island of about two miles in length.

When running for the bar, on which there are 12 feet at low water, situated about 3 miles, E. by N., from the north end of Amelia Island, you ought to bring the lighthouse on Amelia Island to bear S.W. by S., southerly, to assist you in finding the outer buoy, near which are 4 fathoms water, which you leave on the port hand; your course then will be S.W. by S. on the flood tide to the next buoy, which you leave on your starboard hand; after passing this buoy you must steer W. by N. to pass the buoy on the spit off the north end of Amelia Island, which you leave on the port hand, and to which you must give a good berth.

The north breakers and dry sand-banks on the eastern side now show the channel, and after passing the buoy off Amelia Island, your course is about west. An extensive sand-flat extends from Tiger Island as far as Jolly River.

There is high water at St. Mary's Bar, F. and C., at 7h, 30m.; average tide 7 feet.

Without the bar, anchorage may be had, if requisite, in 7 or 8 fathoms, with the south part of Cumberland Island bearing W. by N. ½ N. or W. by N., but it is completely exposed to winds from seaward.

The bar of St. Augustine lies nearly S. by E., about 17 leagues, from that of St. Mary. Between lie the rivers of Nassau and St. John. The bar or entrance of Nassau lies 5 leagues to the southward or S. by E. of St. Mary's, and between there will be found a depth of 5 and 6 fathoms, with sandy ground.

The coast of Amelia Island is a low even coast, but has a range of sand-hills, which serve as a natural dyke against the sea. From each end the bars of the rivers stretch outward, as described, to a considerable distance. The two harbours are spacious, but St. Mary's is the safest, and has a passage within for small craft.

To sail into Nassau River, or out of it, you should sound the channel before you venture on the bar, as all the banks are quicksands, and are apt to change in strong gales from seaward, or freshes out of the river. The tide rises here about 4 feet, and runs strongly, especially the ebb.

The sands at the entrance of Nassau River lie 3 miles off from the south-east point of Amelia Island, and to the same distance from the north-east point of Talbot Island.

ST. JOHN'S.—The entrance of St. John's River lies nearly 3 leagues to the south-

ward of that of Nasaau. In making this place, when bound southward, General's Mount, on the south side of the river, appears like a high round bluff. The north side of the entrance is formed by Talbot Island, which is 5 miles in length, low and covered with trees. It is high water here, on the full and change of the moon, at about 20 minutes past 7. Spring tides rise 12 or 13 feet; neaps not more than 10 feet. The currents run out until quarter flood, and sometimes half flood, and the tides are very much influenced by the winds.

A fixed light is shown from a lighthouse 65 feet high, erected on the south side of the entrance, in lat. 30° 20′ 30″ N., long. 81° 33′ W.

The channel is buoyed; the outer one is a large coppered can buoy, in 18 feet at low water, N.N.E. from the light at about 3 miles distant; S. by W. ½ W., half a mile, is a coppered spar buoy in 10 feet water. There is another spar buoy S. by W., half a mile, in 8 feet water; another spar buoy S.E. by E. ½ E., one-fourth of a mile; one other small spar buoy S. by E., one eighth of a mile off, in 10 feet water. The buoys are all well anchored, with heavy anchors, in the middle of the channel, and being large can be seen at some distance.

In running into St. John's bring the lighthouse to bear S.W. ½ W., and open the top of the chimney in the west end of the dwelling-house, about 3 feet to the south and east of the light; then run in until within the South Breaker Head, and then steer S.S.W. for the General's Mount, within a cable's length of the shore; then haul up to the westward, keeping the shore about the same distance from you, to clear the Middle or North Breakers which show plainly if there is any wind. When nearly opposite the swash, incline towards the north shore, or Fort George Island, to clear a flat that makes off from the shore a considerable distance.

The bar of the river is apt to shift, so that directions for entering can scarcely be depended on. It is most advisable to sound the bar until a pilot comes off. Vessels bound in have to wait for the tide, or becalmed can anchor in 5 fathoms. From the entrance of the river to about 100 miles up, 30 of which go to the westward, and the rest to the south, you may sail in any vessel which the bar will admit.

Between the River St. John and St. Augustine, a distance of about 25 miles S.S.E. ½ E., the shore is so bold as to have 5 and 6 fathoms within half a mile of it. When abreast of Cartel Point, which is the north point of the Bay of St. Augustine, you will come in sight of the Island of St. Anastasia. On the north end of this island there is a lighthouse, which exhibits a fixed light, consisting of a square tower of stone, painted white, and 40 feet in height. Here is also a signal-post, from which, when a vessel appears in sight, a signal is made to the Town of St. Augustine by hoisting colours and firing a gun. If the vessel appears to the northward of the bay, and carries three masts, they hoist an ensign, and hang on a pole, in the form of a triangle, three balls on the north side of the tower; if to the south, the balls are hung out on the south side of the tower; if a two-mast vessel, two balls and a jack are hoisted; if a sloop, one ball and a pendant; for a fleet, they fire five guns and hoist an ensign.

The beach between St. John and St. Augustine is even and straight, except a hill 5 leagues S.S.E. from St. John's, which is a little higher than the rest of the sand-hills. This place, where there are three springs of fine fresh water, is named the Horse-Guards, from General Oglethorpe's posting here a detachment of horse, during his expedition, in 1738, against St. Augustine. It is the first place from Long Bay, in South Carolina, where the inland navigation is interrupted: one may, however, by going up St. Pablo's Creek, from St. John's, arrive within 4 miles of St. Mark's, or North River, and a small boat may, with little difficulty, be hauled over from one to the other.

This beach of St. John is tolerably bold, the soundings being regular, and the bottom generally a fine white sand; but, when you approach the south end, be sure of giving it a good berth, as St. Augustine's Bar stretches a long way out.

ST. AUGUSTINE.—The bar of St. Augustine is formed by the extremity of a narrow shifting sand, which extends 2 miles E.S.E. from Cartel Point, and the point of another sand, which extends half a mile E. by N. from the N.E. point of St. Anastasia Island.

Cartel Point is the northernmost point of the bay, and the bar formed by the spit of sand extending from it has lately been shifted so much, that the passage has been rendered comparatively safe and easy. When sailing in, with the lighthouse on St. Anastasia Island bearing W. by S., steer W.S.W. and you will go in over the bar in 14 feet at high water (1844). The bar has been lately buoyed.

On the bar at high water, the depth is..... 12 feet.
„ half tide „ ..... 9 „
„ low water „ ..... 6½ „

When off St. John's in 9 fathoms, the course to St. Augustine is S.S.E. about 30 miles. When coming from the northward you should not bring the lighthouse farther westward than to bear S.W. by W., and should the wind be from the southward, to endeavour to bring it to bear West; then, if the weather be moderate, they can come to, and anchor in from 7 to 9 fathoms, on a bottom of mud. All vessels when off the bar must show how much water they draw, by signal, hauling down the flag and hoisting up again, agreeable to the number of feet they draw. The pilots, who attend the bar, board you outside when the weather will permit, otherwise they will bring the ship in by signals, which they wave as they wish the vessel to steer; the rate of pilotage is two dollars a foot.

The tide flows at full and change, S.E. by S. and N.W. by N., 8h. 4m. Variation off the bar 3° 45′ E.

Vessels bound from Europe to St. Augustine will shorten their passage considerably by making the south end of Abaco, or the Hole-in-the-Rock (in latitude 25° 50′ N., and longitude 77° 12′ W.), then running W. by S. to make the Berry Islands, and thence W. by N. or W.N.W., till they get into the Gulf Stream. The only precaution to be observed is, to steer to the westward of north, after you are clear of the Grand Bahama Island, because the bank stretches N. by W. nearly, and the currents set partly on the N.W. part of the bank, particularly near the Memory Rock. Observe that it is necessary to give the west end of the Great Bahama a good berth, not merely from its shoals, but lest, with the wind hanging south-westward, you should be embayed.

Having gained the Gulf Stream, with the wind blowing strongly from the eastward, by keeping the Bahama Shore on board, smooth water will be obtained. If it blows from off the opposite coast, by keeping over towards it the same convenience will be experienced; not, however, approaching too near. In a gale from the northward the most prudent way is to retreat before it, in a southerly direction, taking particular care not to approach too near the Florida Shore.

At nearly 5 leagues, S.S.E., from the bar of St. Augustine, and at the south end of the island of St. Anastasia, is Matanza Inlet, the bar of which has only 9 to 8 feet on it at high water. From St. Augustine to this place there is a channel, for 5 feet draught, within St. Anastasia Island, which is the usual communication between the two places, so that few vessels enter the inlet of Matanza from sea.

The bar is known from seaward by the fort, which, appearing white, may be seen in a clear day nearly 31 leagues off. The tide flows at each end of the island, on full and change days, at 7h. 30m.

CAPE CANAVERAL lies S.S.E. ¾ E., 31 leagues, from Matanza Inlet; between lies Mosquito Inlet, which is about 14 leagues, N.W. by N., from Cape Canaveral. At low water 5 feet are on the bar of Mosquito Inlet; the rise of tide is 3½ feet. Within the inlet, about 8 miles, is the town of Smyrna. The shore is bold all the way from Matanza Inlet to the cape, excepting a rocky shoal, which extends one mile and a half from shore, at about 5 miles to the southward of Matanza Inlet.

Cape Canaveral is low, and has a lighthouse upon it showing a revolving light, the position of which is estimated to be lat. 28° 28′ N., and long. 80° 32′ W. From the cape a shoal, dry in parts, extends in a S.E. by E. direction, about 4¾ miles, on the extremity of which the sea constantly breaks. Close to the outer edge of this shoal are 5 and 5½ fathoms, and a small patch of 11 to 13 feet lies 1½ mile from its extremity, upon which the sea occasionally breaks; this patch bears E.S.E. ½ S. from the lighthouse, distant 6½ miles. There is a narrow channel over the shoal extending from the cape, close to the lighthouse, over which small vessels may cross, if not drawing more than 5½ or 6 feet, by bringing the lighthouse to bear S.W. by W. ¾ W., and running in with it on that bearing at the same time keeping the south end of the stable in range with the middle of the lighthouse, until within 250 yards of the beach, when you must steer South, or S. ¼ E., and pass the cape. It should be borne in mind that the current sets strongly to the northward, and must be guarded against; and also that the stable is so close to the lighthouse that the range must be carefully watched.

Immediately to the southward of the lighthouse there is good shelter under the pitch of the cape, from northerly and westerly winds. Bring the lighthouse to bear N.E. and anchor in 15 to 17 feet water, on a bottom of stiff blue mud, at about one-third of a mile from the beach. Close to the lighthouse are two small fresh-water

ponds, and good water can be obtained by digging on the beach anywhere above high-water mark.

To the north-eastward of Cape Canaveral there are some shoals, which are exceedingly dangerous, as the soundings immediately around them are from $5\frac{1}{2}$ to 10 fathoms. The outermost of these are the Hetzel and the Ohio Banks, which are nearly close together, and occupy a space of about 2 miles; the former of these has but 8 to 12 feet on it, and lies N.E. by N., $11\frac{1}{8}$ miles, from the lighthouse; and the latter N.E. $\frac{1}{3}$ N., $11\frac{1}{2}$ miles, from the same object. Between these outer shoals and the cape are some others, the most dangerous of which, the Bull, has 15 feet on it, and lies E.N.E. $\frac{1}{2}$ N., $6\frac{1}{2}$ miles, from the lighthouse. The character of the bottom in the neighbourhood of these shoals is generally hard fine grey sand, and it is recommended when sailing in this vicinity that you should keep the lead going.

When on the parallel of Cape Canaveral you will find at the distance of 5 leagues from it a depth of 18 to 20 fathoms, and at the distance of 9 leagues about 30 fathoms; immediately after sounding in which you will fall off the bank of soundings and obtain no bottom with a line of 100 fathoms in length. This bank of soundings is very steep-to, and when approaching the cape you will find in a depth of 20 fathoms the bottom to consist of broken shells, and, in a depth of 10 fathoms, which is about 3 leagues from the cape, black sand. To the northward of the cape the bank gets much broader, so that in lat. 29° N. an extensive flat, of 8 to 12 fathoms, extends from the beach full 10 leagues out, and you will have 40 fathoms, fine black sand, at 55 miles from the land in this parallel; this latter depth is near the steep edge of the bank.

It should be observed that between Matanza and Mosquito Inlets the beach continues to bear nearly the same appearance as it does to the northward; the coast is moderately bold-to, and the soundings extending off it are regular on a bottom of sand, with occasionally shells, and sometimes green mud. From Mosquito Inlet to Cape Canaveral you meet with an even smooth beach, excepting a slight elevation named Mount Tucker, which lies 5 leagues S.S.E. of the entrance of the inlet; off this part of the coast the soundings are regular. It has been remarked that the wind, on blowing a long and violent gale from E.N.E. to S.E., makes Canaveral Shoals almost unavoidable to a ship sailing in this latitude, and not having larger offing.

It is high water at Cape Canaveral on the days of full and change of the moon at 6h., with a rise of tide above mean low water of 4 feet. The variation of the compass in 1850 was 4° 26′ E.

From Cape Canaveral to Indian River Inlet the coast runs S. by E. *true* 55 miles; between, the coast bends a little to the westward. This part of the coast is flat and not to be trusted to, and is remarkable for the immense number of palm-trees that cover the whole, whence it has obtained the name of Palmer de Ays, or Palm Grove of Ays. At about 23 miles to the southward of Indian River Inlet is Gilbert Inlet, the coast between being a long narrow island named Hutchinson's Island; this inlet is in lat. 27° 9′ N., and long. 80° 11′ W., and at 10 miles to the eastward of its entrance are full 10 fathoms of water, after which it gradually deepens until at the distance of 15 miles you are off the bank of soundings. Between Indian River and Gilbert Inlets, soundings of 6 and 7 fathoms extend fully 5 miles from the land.

Within Hutchinson's Island is St. Lucie Sound, which runs nearly parallel to the shore, to the northward, past Cape Canaveral. Into this sound many large streams enter, the principal of which are St. Sebastian, Turkey, and St. Lucie; the latter is near the south end of the sound. Indian River and Gilbert Inlets are the entrances to St. Lucie Sound; they both have shifting bars, sometimes not admitting a boat, and at other times having a depth of 6 to 10 feet, and the tides are strong so that they are difficult to enter. In these inlets the ground is said to do much mischief to hempen cables. Here are an abundance of fish and oysters, and the people of the country resort much to these places for the purpose of fishing.

From the northern side of Indian River Inlet, a reef of rocks is said to run along shore, to the northward, fully 7 leagues, and to extend off 2 miles; without this reef there is a flat of $1\frac{1}{2}$ to $2\frac{1}{2}$ fathoms which extends fully 2 leagues from the land and continues to run to the northward along shore to near Cape Canaveral. About $5\frac{1}{2}$ leagues to the northward of the inlet, are some knolls or hummocks, named the Tortolas, off which are some heads of rocks under water.

From Gilbert Inlet the coast runs off to the S. by E., about 12 miles, to the Jupiter Inlet, the mouth of which is closed; this is in lat. 26° 57′ N. and long. 80° 7′ W., and has a small fort behind it. From hence the coast runs to the southward, about 42

miles, to Hillsborough Inlet. In sailing along this shore you will pass three hills, and at about half-way another, named Cooper's Hill, which is remarkable land, where cabbage-trees, sea-grapes, and cocoa-plants abound; here is also an abundance of venison and other game.

When sailing to the northward, the bank of soundings increases in breadth at nearly 10 miles from Jupiter's Inlet, where, if you are about 8 miles from the land, you will find 20 fathoms water. Hence in proceeding towards Cape Canaveral, when you have attained the latitude of 28° N., you will have 90 fathoms, at 40 miles from the land, and 20 fathoms, black broken shells, at 24 miles. The bank continues this breadth, with similar soundings, all the way to the cape, sometimes black sand, and occasionally mixed with shells. After sounding in 60 to 90 fathoms you will fall off the bank of soundings, for it is steep-to.

Hillsborough Inlet is the inlet into which the Middle and Hillsborough Rivers fall, and is in general shallow, only admitting small vessels: it is estimated to lie in lat. 26° 16′ N. and long. 80° 6′ W., according to the last observations.* From hence to the northward the shore is moderately bold, and you must keep pretty close in when bound to the southward, as the Gulf Stream, which from the Fowey Rocks to Hillsborough Inlet, runs parallel to the shore, or nearly so, in the meridian of 80° W., between the inlet and Cooper's Hill, in latitude about 26° 45′ N., approaches very near the shore, and the water changes gradually from a muddy green to a blue colour.

From Hillsborough Inlet the coast runs to the southward, about 15 miles, to New River Inlet, within which is an old fort, named Fort Lauderdale. About 15 miles further to the southward is a narrow channel, named Boca Ratones, or White Inlet, separating Cayo Biscayno and another islet from the shore; all this coast is full of sandy hillocks, covered with shrubs and trees, and is also flat, with no more than 12 feet water in it. Within Boca Ratones is a small settlement and fort, named Fort Dallas, access to which is through the boca, which will admit boats and small craft. In the vicinity of the settlement there are a number of small streams.

It is proper to observe that great caution is requisite when running along the coast of Florida, as the shoal water extends a considerable distance out, and renders the channels between the shoals and the inner edge of the Gulf Stream very narrow, which must be attended to by vessels bound to the southward.

Cayo Biscayno, or, as it is sometimes termed, Cape Florida, may be considered as the last of the Florida Cays, reckoning from the westward. It lies within the northern extreme of the Hawke Channel, or the channel within the Florida Reef, and has, at about 2 leagues to the eastward of it, a dangerous reef, named the Fowey Rocks. On the cay there is now a lighthouse showing a fixed light, at 70 feet above the sea, visible about 15 miles, which bears about N. by E. ½ E., 32 miles, from the lightvessel on the Carysfort Reef, and is estimated to be 7 miles distant from the outer edge of the Fowey Rocks or Great Reef.

Vessels drawing 10 feet may enter from the N.E., between the reef and Cape Florida, to the distance of 2½ miles above the light, and find shelter in the mouth of the Hawke Channel within the reef. Near to Cape Florida there is a reef, which is, or was, denoted by a white spar buoy.

The Fowey Rocks lie at the north end of the Florida Reef, and are partly dry. They were so called from H. M. S. Fowey having grounded on them, and becoming much damaged, although she afterwards got over into 3 fathoms water. These rocks lie due East from Biscayno Cay.

If so unfortunate as to be shipwrecked in the neighbourhood of Cape Florida, there is a settlement on the main land, near the banks of a river, where assistance can be obtained; by passing through Boca Ratones in the vessel's boats, you will see the houses a-head on the main. If the accident should happen to the northward of Boca Ratones, distant from it 2 miles, you will perceive mangroves, thinly scattered, from whence the houses may be seen, and on making a signal, with fire or otherwise, you will obtain assistance. Again, should the accident happen to the southward of New River, you may proceed southerly along the beach, where are posts fixed along the shore, at the distance of 4 miles from each other, on which is an inscription in English, French, and

* The positions of Hillsborough Inlet and of the other inlets on the coast of Florida, have been taken from the map of Col. Abert, deposited in the Topographical Bureau at Washington. It is to be observed that they do not correspond by any means with the positions formerly assigned to them.

Spanish, informing where are wells of fresh water, at which the thirsty mariner may obtain relief. The notice of this establishment appeared in 1822.

DIRECTIONS FOR SAILING FROM ST. AUGUSTINE TO CAPE FLORIDA.—The following instructions were written some few years since before the map of Col. Abert, before referred to, was constructed, and it will be observed that many of the inlets noticed are not mentioned in the previous description of the coast, which has been corrected by the colonel's map, as far as our information would warrant. We have added these instructions as they may be useful, but it is not in our power at present to reconcile the discrepancies. We may mention that a survey is now in progress, by order of the United States Government, of the whole coast of Florida.

"So soon as you are clear of the bar of St. Augustine, steer S.E. easterly; at the distance of about 6 leagues on this course, it will bring you within about 3 leagues right abreast of Matanza, in 7 or 10 fathoms water, fine dark grey sand. In continuing from thence you will go along shore at an offing of $4\frac{1}{2}$ leagues, and in your way will meet with soundings from 10 to 15 fathoms, chiefly of various sorts of sand, but sometimes of a very softish greenish mud, which the lead will sink into over the strap.

"The above offing you may with safety keep in with vessels of any draught, for 23 leagues to the south-eastward of Matanza. You will begin to get shells among your soundings at 19 leagues, chiefly white and black, sometimes mixed with black and grey sand, but mostly the shells by themselves, very seldom the sand alone; if you chance to find sand only, it will be a coarse grey kind. At 23 leagues, as above, you will begin to get red shells, which is a true sign that you approach the shoals of Cape Canaveral, there being no red shells far to the north of it; now you may begin to haul off, though you might continue safely until 7 fathoms, or, in the day-time, even in 3, that being the depth half a mile without the outer breaker. In hauling off, you will find from 10 to 12 fathoms, sand and shells; and, if you come near to the N.E. end of the shoal, you will often find live cockles, on a black sandy bottom, in 10 or 11 fathoms. Your offing will be made good on a course S.E. by E. $\frac{1}{2}$ E. from the first cast on red shells, till you judge yourself about 9 leagues off; then if you chose to make Hillsborough Inlet, in latitude 27° 15′ run south; but if you are bound directly to the Reef, steer S. $\frac{1}{2}$ E., and it will bring you in with Grenville Inlet, where the soundings are become quite narrow.

"In running to the southward from the outermost part of the shore, observe, when you begin to get very coarse black sand, and black shells; for soon after you will find your bottom changed to white sand, and your water to deepen; when you find 16 fathoms on white sand, you begin to run clear of it, and in 20 or 21 fathoms you are quite clear; then, in pursuing a south course, your water again shoalens; and in a run of about 3 leagues, you once more will find red shells, mixed with black and red sand, continuing a great way; you still shoalen your water, and when you come in about 11 fathoms, you will have shells alone without sand. All this while you see no land, it making a bay to the south of the cape, till you come into about 9 fathoms, when you can just perceive the Tortolas, already described. If you have to call at Hillsborough Inlet, which lies 8 leagues from the 9 fathoms, it is now time to haul in a little for the land; from the Tortolas southward you will again find sand, sometimes without shells; if you intend to anchor off the inlet, take care to run no nearer in than from $4\frac{1}{2}$ to 5 fathoms, and chose a spot of shelly bottom, as being safer for your cable than the sand.

"Observe that, between Cape Canaveral and Hillsborough Inlet, the coast is flat, and not to be trusted so much as the shore north of the cape. Observe also, that the red shells extend no farther south than Hillsborough Inlet, and but a little way north of the cape shoals; whereby you have an infallible mark in coming well in upon soundings, either from the northward or southward, and to know that you are in with or near to the cape shoals, if even you should chance to have been without any observation for several days.

"In going from Hillsborough Inlet to the southward, the coast is pretty bold, and your course is S.S.E. $\frac{1}{2}$ E. towards Grenville's; at near 7 leagues from the inlet you meet with some high rocks, on the edge of the beach, which are an excellent mark to know this place: and $4\frac{1}{2}$ leagues farther is Grenville Inlet, or the southern entrance of St. Lucie Sound. When you begin to see the above rocks, you will also perceive a change in the colour of the water; the soundings are here no more than about 5 leagues broad, and vessels have been at anchor in 12 or 13 fathoms water, 3 leagues from the shore, when, upon trying the current with the log, it was found to set to the N.E. at the

rate of 3½ miles per hour, the water being almost blue in that depth; therefore, it is best to keep the shore on board, at least exceed not 2 leagues from it; your soundings will be various, on sand, green oaze, and shells; avoid the little reef off Cooper's Hill, a little north of the large Spring in the Rock, which spring is in lat. 26° 42′. Now it is necessary to keep close along the shore, within a distance of from half a mile to a mile, and you will find deep water close in, the bottom in many places coral and gravel, sometimes rocks, and notwithstanding the foulness of the ground, it is yet highly necessary to come to an anchor, if it should fall calm, or else you will lose as much ground in the three hours calm as may cost you three days to recover.

"About 2½ leagues south of Middle River, is a pretty broad ledge of firm rocks, joining the beach under water, which continues as far as White Inlet. Abreast of this ledge you will meet with many spots of coral, sponges, rocks, and grass, which, through the clearness of the water, look frightful to strangers, but have nowhere less than 7 fathoms water on them: here is fish in great plenty."

Captain George Walker has observed in respect to the weather on the coast of South Carolina:—"From the 1st of November to the last of February, the hardest gales prevail that blow on this coast; and in general from the N.N.E. to the S.S.E. the wind any way easterly comes on very suddenly to a gale during the season above-mentioned; and these gales give but very little warning. In the year 1777, I had the charge of his Majesty's ship the Lively, and was then at anchor in St. Augustine Bay, when it came on to blow at E.N.E., and in fifteen minutes time I was obliged to slip, and had we not carried sail to the utmost, we should not have cleared the land to the southward.

"When the wind backs against the sun with a small rain, you will perceive the sea to rise before the wind comes; then prepare for a gale, which in general will last fifty or sixty hours. If you should be obliged to cut or slip, carry all the sail you possibly can, to get an offing before it increases, so as to put you past carrying any sail, which is always the case; and observe that, the flood-tide setting to the southward will be of no service to you farther out than in 12 fathoms of water, when you will be in the southern current until you get into 46 fathoms, which is about 15 leagues from land. Then you will be in the stream, issuing out of the Strait of Florida, and which runs strongly along the edge of soundings as far to the northward as the latitude 35° 15′. Then it sets more easterly, or about N.E. by N. as far as the latitude 37°; from thence as far as the capes of Delaware or Philadelphia, in latitude 38° 50′ N., its direction is about E.N.E., and from thence, in the latitude of 38° 57′ N., it sets away nearly East."

When in lat. about 29° 30′ and long. 79° 30′, you should steer North, until in lat. 30° 30′, by which means you will keep in the best current of the Gulf Stream; thence you must steer N.N.E., easterly, until up to Cape Hatteras.

Along the southern coast of the United States, you will find no tide farther out from the shore than 10 or 12 fathoms water; from that depth until the edge of soundings, you will have a current setting to the southward, at the rate of one mile per hour: when out of soundings, you will have the current setting to the N.E. quarter, and the farther you go to the northward, it sets more easterly, but not so strong as before-mentioned; when you get to the northward of 39°, it sets about E.

The following is an account of the tides along the coast from New York to St. Augustine:—

	FLOOD.	EBB.
From the west end of Long Island to Cape May....	W. by S.	E. by N.
Cape Henlopen to Cape Charles	S. by W.	N. by E.
Cape Charles to Cape Hatteras	S.S.W.	N.N.E.
Cape Hatteras to Cape Lookout	S.W. by W.	N.E. by E.
Cape Lookout to Cape Fear	S.W. by W.	N.E. by E.
Cape Fear to Cape Roman.....	W.S.W.	E.N.E.
Cape Roman to Charleston.....	W.S.W.	E.N.E.
Charleston to Tybee	W.S.W.	E.N.E.
Tybee to St. Simon's	S.S.W.	N.N.E.
St. Simon's to St. John's	S. by W.	N. by E.
St. John's to the Bay of St. Augustine.....	South.	North.

Into the Florida Reef there are various openings which afford safe communication with the Florida Stream, there being not less than 18 feet water in them. The first, named Great Inlet, in lat. about 24° 59′ N., is easily recognised, there being a knoll of dry rocks on the south-east point of the reef directly on the edge of the channel. The second, named Spencer's Inlet, is directly opposite Old Matacumbé in lat. 24° 45′, and is about 6 miles broad, but is not so easily recognised, there being no marks. Having found these channels, you may easily run in by placing a boat on the reef to mark out the entrance; and keeping a good look-out and the lead going, you will be able to enter, in moderate weather, when want of water, contrary winds, or other circumstances should render such a step necessary.

We may remark concerning the Florida Reef that its proximity is indicated in the day time, by the whitish colour of the water; and under these circumstances there is no risk in running along it; but by night it is very different, for it ought to be carefully avoided by keeping the lead constantly going, as there are soundings at 2 miles from the edges, which will serve to warn of approach to danger.

In more particularly describing the islands on the Florida Reef, we shall commence with the Dry Tortugas, and proceed thence easterly towards Cape Florida.

THE DRY TORTUGAS are a group of ten distinct islands or cays, low, some covered with mangroves, surrounded with reefs and sand banks, extending N.E. and S.W., 11 miles, and may be seen at the distance of 4 leagues. The S.W. cay is in latitude about 24° 36′ N. From the south point of the S.W. cay a reef of coral rocks runs off in a S.W. direction, about one quarter of a mile; the other dangers which surround this group of the Tortugas are sufficiently visible, particularly from the mast-head, and consequently they are easily avoided.

TORTUGAS BANK.—To the westward of these islands, is the centre of a large bank of dark-coloured coral rock, mixed with small patches of white sand, and with irregular soundings from 6 to 12 fathoms; and although from the whiteness of the water over it, it appears dangerous, in reality it is not so. Its extent from north to south is 9½ miles, and from east to west 6 miles. Between this bank and the flats of the Dry Tortugas, there is a channel of one league in breadth at the narrowest part, having in general from 7 to 15 fathoms, sand, coral, and shells. If you are bound to the eastward, and meet with a strong easterly gale, which is frequently the case in summer, you may anchor in 5 or 6 fathoms, under the lee of the long Sandy Island to the northward of South-west Cay, about a quarter of a mile off shore.

The Bank of Soundings extends 5 or 6 leagues to the southward of the Tortugas, but much farther to the westward and northward, all the way along the Florida shore. This circumstance proves favourable for safely navigating in those parts, as caution in sounding may prevent danger in the night time; for the soundings are extremely regular all along the bank to the northward, almost to Cape St. Blas, or latitude 29° 40′; so that by the latitude and depth of water, it may be, in general, known how far a ship is to the eastward or westward. From the depth of 20 to 50 fathoms, there is a space of several leagues; but from 50 to 60 it deepens quickly to 70 and 80, and soon after to no ground.

A lighthouse has been erected upon Bush or Garden Cay, which is 60 feet high, has 15 reflecting lamps, and exhibits a fixed light, visible about 18 miles. It may be approached on the west, south, and east sides, within 4 miles, without danger, but you must not go nearer to it than 9 miles on the north side. The American coast pilot says that this light "can be seen when a vessel is on shore, and is, without doubt, the worst light on the coast." Absolute reliance, therefore, ought not to be placed on it appearance. Its position is 24° 36′ N., 82° 52′ 35″ W.

Good anchorage is afforded in a small snug harbour, near Bush Cay, which is sheltered from the sea by a large reef of rocks, and a flat shoal within them, about half a mile broad; the bottom is soft clay and mud. This harbour is quite smooth, even in a gale of wind, and, in a case of necessity, a vessel might be easily hove down here, as there are 3 fathoms close to the bank.

The soundings appear to be very regular to the southward of the Tortugas, until within 8 leagues of the shore, where, in some places, they become uneven. There is fine deep water to the northward of them, of 20 to 30 fathoms, sand, shells, and coral. It is necessary to sound frequently in passing by during the night, and never to stand into less than 30 or 35 fathoms.

There is no drinkable water to be obtained on any of the Tortugas, except on the

northernmost island, nor can any wood be procured except a few bushes, which are useful in indicating the cays at a distance.

To the eastward of the Tortugas there is a broad channel over the bank of 9 to 17 fathoms water, through which vessels may pass, and save much time and distance, when going to and from the coast of Florida, &c.; but the passage is by no means to be attempted, unless you can see the Tortugas distinctly, and pass within 2 or 3 leagues of the easternmost of them; as there is a coral bank of only 12 feet water at the distance of 4 leagues from them; and farther on, towards Cay Marquesa, the westernmost of the Florida Cays, there is a very dangerous and extensive bank of quicksand, on many parts of which there are no more than 4 or 5 feet of water. This bank is of a remarkable white colour, and may be easily seen and avoided in the day time. On the western edge there is said to be a spar buoy, near a shoal of 6 feet.

CAYO MARQUES, or Marques Cay, lies about 14 leagues, E. $\frac{1}{4}$ N., from the southwest cay of the Tortugas. It is the westernmost of the range of Florida Cays. There is a cluster of 8 or 9 Mangrove Islands in its vicinity, the easternmost of which, named Cayo de Boca Grande, is the largest, being 3 miles in extent from West to East, bending to the southward and westward in the form of a horse-shoe. To the westward and north-westward from Cayo Marques is a large bank of quicksand, before-mentioned, extending 5 or 6 leagues; and nearly due south from the western extremity of this bank lies the western end of the General Florida Reef, in lat. 24° 25′ and long. 82° 28′, being the southernmost part of the whole. There is a channel between the reef and the bank above-mentioned, and likewise all along between the reef and the cays, which is, in many places, upwards of 4 miles broad. In that part of the channel to the southwestward and southward of Cayo Marquesa, there are from 11 to 4 fathoms water, on soft mud.

In the channel to the westward of Cayo Marquesa, there is a depth of 7 to 10 fathoms; and, on the reef, the least water is $3\frac{3}{4}$ fathoms. Abreast of Cayo Marquesa $7\frac{1}{2}$ fathoms, soft mud, is the deepest water in the channel, and $3\frac{1}{2}$ the least water on the reef.

The western end of the Florida Reef is about $2\frac{1}{2}$ miles broad, but the least water on it are5 fathoms, with irregular soundings in 7 or 8 fathoms. The water over it is discoloured with white and brown patches of sand and coral rocks, and the bottom is distinctly visible. The reef, in general, on its southern side, is steep-to, there being from 30 to 20 fathoms, muddy bottom, within a mile or two of it.

To the eastward of Cayo Marquesa there is a large opening named Boca Grande, of about 2 miles in breadth; a channel runs through to the northward, in which the least water is 9 feet, but it cannot be recommended to strangers. The western side of it is very near to, and may be distinguished by the Cayo de Boca Grande, above mentioned.

CAY WEST, named also Thompson's Island, is the first island of any consequence to the eastward of Cayo de Boca Grande, from which it is distant six leagues. There are a number of scattered mangrove islets between it and Boca Grande, the three southernmost of which have white sandy beaches. Cay West is $5\frac{1}{2}$ miles in length, and has a sandy beach on the south side. Its harbour is capable of admitting mercantile vessels of the largest class, which are protected from all winds within 200 yards of the N.W. point of the island. Several ponds, during nine months of the year, produce excellent fresh water. The trees are very thick upon it, especially at the west end, where there is anchorage in from 3 to 5 fathoms, and fresh water. The town is on the northwest end of the island. To the northward of the west end there is also a safe and convenient anchorage, with a channel of 4 fathoms into it. To sail in, you must pass within less than a cable's length of the north-west point, which is remarkable by a very bushy tree and a turtle crawl, and anchor in $3\frac{3}{4}$ or $3\frac{1}{2}$ fathoms, at about half-way between it and a small mangrove island (Cayo Canaletta), which lies about a mile to the northward of it. The following directions to run for this anchorage have also been given:—

"In running along the Gulf Stream you must not attempt to pass the reef, which is about 6 miles from the island, until you bring the lighthouse on Whitehead Point to bear N.N.W.; then steer for the harbour, which lies at the N.W. point, leaving Sand Cay Lighthouse* on your port hand, as you cross the reef, and taking care to give Whitehead Point a berth of a mile, on account of the reef that runs off it. The lighthouse on Sand Cay bears from Cay West Lighthouse S.S.W., distant 9 miles. After

* This lighthouse has been destroyed. See account of Sand Cay following.

you pass the reef (at the inner edge of which a buoy has been placed) haul up for the flagstaff. You will have 3½ to 4 fathoms water crossing the reef, and then from 6 to 7 fathoms until you enter the harbour, where you may anchor in perfect safety. There is a powerful tide here, rising and falling about 4 or 5 feet, and setting alternately N.E. and S.W."

The best anchoring ground is near the east bank, for there is some small coral near the middle and west parts of the harbour. This harbour is frequented by the turtlers and wreckers from Providence, and likewise by the fishing craft from the Havana, who find it convenient, on account of a channel through the bank to the northward, leading to the coast of Florida. It is high water, at full and change, at 8h 20m. Good pilots can be obtained at Cay West, to carry vessels through. The harbour is large and commodious, admitting vessels of the largest class.

A new lighthouse has been erected on Whitehead Point, which is the S.W. point of Cay West, the light of which is fixed and elevated 83½ feet above the level of the sea, visible from a ship's deck about 22 miles. It stands 800 yards N.E. of the site of the old light. First lighted February 10th, 1848. The bearings and courses heretofore followed, for entering this port, may still be observed; but vessels approaching the ship-channel bar in the day time, will find 5 fathoms water, by bringing the buoy in range with the lighthouse. Five large spar-buoys have been moored in the channel leading from the Gulf Stream, through the harbour of Cay West into the Gulf of Mexico; these generally denote the greatest depth of water. Vessels drawing 9½ feet of water, and bound to Mobile, Pensacola, and New Orleans, can pass through the channel with safety, and thus avoid the tedious and dangerous navigation of the gulf.

The lightvessel for the N.W. bar of this harbour lies about 8 miles from Cay West, at the junction of the North and N.W. channels, so as to serve as a guide to vessels entering either. Vessels from the westward, coming in by the North Channel, will bring the light vessel to bear due South, and run directly for her; and on reaching her station, will then run for the lighthouse on Cay West. Unless the tide should be extraordinarily low, there are 10 feet in this channel at low water, and 12 feet at high water. Vessels coming in by the N.W. Channel will bring the lightvessel to bear S.E. ½ E., run for her, and then steer for the lighthouse as before. This channel is considered the best, having from 1 to 2 feet more water than the other. Masters of vessels going out from Cay West, will merely reverse the above directions. The lightvessel shows one light, at an elevation of about 50 feet, which may be seen, in clear weather, 9 or 10 miles.

A white buoy, showing 3 feet above water, is moored on the reef, in 26 feet water, bearing from the lighthouse at Whitehead Point (Cay West), S.S.E., and from the lighthouse at Sand Cay, E. by N. ½ N.

A white buoy, showing 3 feet above the water, is moored in 27 or 28 feet, and bears S.S.W. ½ W. from the lighthouse on Cay West, near the dry rocks which lie to the west of Sand Cay, to show the west channel into Cay West.

The S.W. point of Cay West lies in latitude 24° 32′ N., and longitude 81° 47′ 30″ W., and it lies nearly N. 14° E., *true*, 27 leagues from Havana.

SAND CAY, or PORPOISE ISLAND, the westernmost sandy cay on the Florida Reef, was distinguished by a lighthouse, which, however, was destroyed by a gale in October, 1846. It was the best light on the coast, and stood on the reef at 8½ miles, S.W. by S., from that on Cay West. To the westward of the former lighthouse there is a buoy, which lies in the least water on some dry rocks. A schooner lightvessel temporarily supplies the place of the lighthouse, and is moored as near the side of the lighthouse as possible, and since Jan. 10th, 1847, has shown a fixed light from a single lantern without reflectors, at an elevation of 45 feet, visible 6 or 7 miles off. The lighthouse was stated to bear S. 21° W. (S. 28° W.), eight miles and seven-tenths from the west point of Cay West; but according to Mr. Gauld's survey the true bearing and distance are S. 32° W., 7¼ miles only.

About 3 miles to the west of Sand Cay, there is a dry patch of rocks in the reef, and to the eastward, at about half that distance from it, is another. From thence there are two or three fathoms on the reef, for about 4 miles to the eastward of the cay; but, with the west end of Cay West bearing about N.N.W. or N. by W. ½ W., there is a fair channel over the reef, of 4½ and 4 fathoms; and, when you get into 5 and 6 fathoms, soft mud, within the reef, edge a little more to the westward, in otder to give berth to a rocky spit that runs off from the south-west point of Cay West.

The channel within the reef between Boca Grande and Cay West, is in general about

$2\frac{1}{2}$ to 3 miles broad, and the deepest water is 8 fathoms, fine sand and clay. There are two or three patches of coral rocks with $2\frac{1}{2}$ and 3 fathoms water, lying nearly in mid-channel, about S.S.E. $\frac{1}{4}$ E. from the west end of Cay West. At the east end of Cay West there is a small opening named Boca Chica, but nothing larger than a canoe can pass through over the shoals.

CAYOS SAMBOES.—At 6 miles, S.S.E. $\frac{1}{2}$ E., from Boca Chica, there are three small sandy cays on the reefs bearing this name; between the westernmost and middle one is a channel of 4 fathoms over the reefs, and there is another of 3 fathoms between the middle and easternmost cay; but for 9 miles to the eastward of these cays the reef is broad and dangerous, there being in some places dry rocks; and, in general, it is covered with sunken rocks, 4 or 5 feet under water, with crooked channels of 4, 6, and 7 fathoms between them.

About 6 miles to the eastward of Boca Chica, there is a small island, with remarkable high bluff trees, appearing in most points of view, in shape of a saddle. It has an opening, at each end, into a large shallow bay, bordered with innumberable mangrove islands, to the northward.

PINE ISLANDS.—At the distance of $5\frac{1}{3}$ leagues from the west end of Cay West, there are several large islands, covered with pine trees, which continue all the way to Bahia Honda, a space of nearly 4 leagues farther on to the eastward; but these pine islands are bordered with mangrove cays on the south, and there are several openings quite through to the northward, but so shallow as to be passable only in boats and canoes.

LOOE CAY (so named from H. M. S. Looe being cast away there,) is a small sandy island on the reef, $7\frac{1}{2}$ leagues from the west end of Cay West, $15\frac{1}{2}$ from Cayo Marquesa, and 28 leagues to the eastward of the Tortugas. The rocks run but a very little out from it, and there is no kind of danger but what may be avoided in the day time. The reef is very steep on the south side, there being 20 fathoms within a mile of the cay, and 100 fathoms about 2 leagues to the southward of it. There is a channel of 4 or 5 fathoms over the reef, about a mile to the westward of the cay; but to the eastward of it, for 2 or 3 miles, you cannot depend upon carrying more than 15 or 16 feet, though farther on to the eastward, for the distance of 5 leagues, you will $3\frac{1}{2}$, and in many places 4 and 5 fathoms, the least water or the reef.

There is a white tower built 30 feet high on Looe Cay; this has often been mistaken for a lighthouse. It is painted white, and has a black pole and ball at the top.* There is also a buoy on the reef, about 4 or 5 miles from Looe Cay to the eastward, in 4 fathoms water, showing the greatest depth, and marking the channel across the reef, opposite to Bahia Honda.

There is a small harbour about 4 miles, N. $\frac{1}{2}$ W., from Looe Cay, which is named by the Providence people New-found Harbour, and by the Spaniards Cagvamos or Cayovamo; but it is fit for nothing but small craft, as there are only 7 or 8 feet of water in it.

BAHIA HONDA lies nearly 7 miles, N.E. $\frac{1}{2}$ N., from Looe Cay. It has a large entrance, and a fair channel of 4 or 5 fathoms, but within the harbour it shoalens to $3\frac{1}{2}$, 3, $2\frac{3}{4}$, and $2\frac{1}{2}$ fathoms, and the bottom in general is rather hard rough ground. This place may be easily known by three small islands on the west side of the entrance, and a large island on the east side, a mile long, with a sandy beach, remarkable for a number of tall palmetto cabbage-trees, the first of the kind you fall in with coming from the westward; this island is therefore named Cabbage-tree Island.

From Bahia Honda to the west end of Cayos Vacas the distance is $3\frac{1}{2}$ leagues, and the direction of the coast turns still more to the northward. There are only a few small cays between them, the body, or thick cluster of islands, ending about Bahia Honda, which makes this vacant space the more remarkable.

About 5 miles, S. $\frac{1}{4}$ E., from the west end of Cayos Vacas there is a small sandy cay on the reef named Cayo Sombrero. This is the easternmost cay on the reef.

Channel between Cay West and Cayos Vacas and the Reef.—There are two or three small coral patches of $2\frac{1}{2}$ and 3 fathoms water, lying nearly in mid-channel, about S.S.E. $\frac{1}{2}$ E. from the west end of Cay West, with 5 or 6 fathoms round them. The channel here is about $4\frac{1}{2}$ or 5 miles broad, and continues to be upwards of 4 miles in breadth to the Cayos Samboes. Here the reef grows broader, and the channel narrower, with

* In 1844 notice was given that this beacon had been washed away, but the news required confirmation. It is probable that the buoys may have been washed away at the same time.

4 or 5 fathoms the deepest water. In the narrowest part, which is four or five miles to the westward of Looe Cay, the channel is only $1\frac{1}{2}$ mile broad, and $3\frac{1}{4}$ fathoms the deepest water; but as you approach Looe Cay, the channel becomes broader again, and deepens to 5, 6, and 7 fathoms, mud and clay. Abreast of Bahia Honda, the channel is about $2\frac{1}{2}$ miles broad, with the same soundings, and continues about the same breadth as far as Cayos de Vacas. There are two general remarks concerning this channel to the westward of Cayos de Vacas, namely, that you will have 3 fathoms all the way, within a mile of the cays, and that you will always find the deepest water nearest the reef.

Cayos de Vacas, or rather the thick range of islands that go by that name, extend about 13 miles, N.E. by E.; the easternmost of these is named Duck Cay. From Duck Cay to Cayo Vivoras, or Viper Cay, the distance is about $3\frac{1}{4}$ miles, and there are three small mangrove islands between. Cayo Vivoras is about 4 miles long, with a white sandy beach, and is remarkable for a high hummock of trees at the west end. From the east end of Cayo Vivoras to the west end of Old Matacumbé, the distance is 3 miles.

Old Matacumbé is $3\frac{1}{4}$ miles long, in a N.E. direction; the trees at the north end are very high, and level at the top, appearing at a distance like table-land. There is a safe harbour near the north end of Matacumbé, where vessels not drawing more than 7 or 8 feet may go in, and anchor in 3 fathoms, secure from all winds; but they must go round the east side of a small island, named Indian Cay, or Matanza, keeping about a cable's length off shore, where there are from 9 to 10 feet for some distance, and thence two or three fathoms in a broad channel, which turns round towards the north end of Matacumbé, where there is a large turtle crawl. The channel is easily distinguished by the white shallow banks on each side, on which there are only 2 or 3 feet water.

Indian Cay lies about a mile to the eastward of Matacumbé; and it is all shoal ground between them. In 1842 notice was given that for the purpose of assisting vessels in sailing inside the reef, it was intended to show a light at Indian Cay, which could be seen from the Gulf, bearing W.N.W. from the western point of Alligator Reef, lat. 24° 54′ N., and long. 80° 40′ W. *Nautical Magazine, June*, 1842. We are not aware if the intention has been carried into effect.

The best inlet in this locality, over the Florida Reef, towards the Cays, or into Hawke Channel, lies with Indian or Matanza Cay bearing N.N.W. It is named Spencer's Inlet, and its least depth, on this bearing, is $4\frac{1}{2}$ fathoms.

To the N.W. and northward of Matacumbé, the mangrove islands begin again, and extend all the way to the main land, about 6 or 7 leagues distant, and all the way to the eastward within Cayo Largo, &c., but that large space is almost one continued flat, with some channels of 5 or 6 feet water.

The Reef from Cayo Sombrero is, in general, very broken ground, as far as the west end of Matacumbé, there being many patches of coral rocks with 6 to 8 feet of water, and others, where the rocks rise to the surface, particularly some spots off the east end of Cayo Largo, about 7 miles off shore. There are likewise some large patches of 8 or 9 feet off the middle of Cayo Vivoras, and another large rocky shoal of 8 or 9 feet, off the west end of Matacumbé, at the distance of $4\frac{1}{2}$ miles; but there are channels of at least 3 fathoms over several parts of the reef between them.

There are also some dangerous shoals of coral rocks in the channel, between the reef and the south-west part of Cayos de Vacas, the largest of which has only four feet water on it, and lies about $3\frac{1}{2}$ miles, N.E. $\frac{1}{2}$ N., from Cayo Sombrero, and about $1\frac{1}{2}$ mile from Cayos de Vacas. There are several other small patches of 5 or 6 feet to the north-eastward of it; but in the day time, all these shoals appear very plainly at a distance, being of a brown colour; and, as it is unsafe running in the night, it is always necessary to anchor, when night approaches, through the whole extent of the channel.

From the shoals of Cayos de Vacas, the channel still continues to be 2 or $2\frac{1}{2}$ miles broad, to the eastward of Matacumbé; 4 fathoms is the deepest water, but $2\frac{1}{2}$ and 3 fathoms is the general depth along Cayo Vivoras, 2 or 3 miles distant.

WATERING PLACES.—There is no drinkable water on the Tortugas, nor anywhere till you come to the west end of Cay West, where there are several wells dug in the sand. The water is tolerably good, especially after rain; but sometimes it will be found a little brackish; in which case the best way is to dig a new well, which may be soon done, and you will find the water much better than what has been standing in the old wells. At Bahia Honda very good fresh water may be obtained in the same

manner ; and on the south side of Cayos de Vacas, at about 7 miles from the west end, there are also fresh water wells on the east side of a narrow opening, with a sandy beach on the east side of it. There are also several fresh water swamps, and natural reservoirs amongst the rocks, particularly a large one on the north side of Cayos de Vacas, about 5½ miles from the west end, where the water never fails. It lies in a valley, about 100 yards from the beach, a little to the westward of three mangrove islands. Fresh water may also be procured among the rocks, at the west end of Cayos de Vacas, and the small islands to the westward of it, also at the west end of Duck Cay, and several other places. Wherever there is a rocky foundation, there is, generally, a chance of obtaining fresh water, especially after rain. But the principal watering place is at the north end of Old Matacumbé, were there is a natural well in a rock, about 4 feet deep, which is constantly full of excellent water, being a kind of spring. Matacumbé is, therefore, much frequented by the wreckers and turtlers, as there is no fresh water for many leagues to the eastward.

New Matacumbé lies about 1¾ mile north-eastward from Old Matacumbé, and is 3½ miles long, in a N.E. direction. It is covered with thick tall trees. At the N.E. end of it there is an opening, about half a mile wide, with a small mangrove island in the middle; then a mangrove island about a mile and a half long, which is separated by a narrow channel, from a large island, about 5 miles in length, covered with high trees of various kinds. This island has no name given to it, either by the Spaniards or the Providence people; yet it is named Long Island in the charts, and was formerly included under the general appellation of Cayo Largo, from which it is separated by a narrow channel.

Tavernier Cay, or Cayo Tabona, is a small island about a mile from the S.W. end of Cayo Largo, and about 6 leagues, N.E., from Old Matacumbé. There is a very good anchorage a little to the northward of it, for such vessels as frequent the coast, and which is much frequented by fishermen.

Cayo Rodriguez, a pretty large mangrove island, without any firm ground, the roots of the trees being constantly overflowed, likewise lies off Cayo Largo at the distance of 4 miles N.E. by N. from Tavernier. From hence the coast of Cayo Largo, which here appears like main land, turns quickly to N.N.E. and N. by E.

There are no shoals on the reef opposite to Old Matacumbé, except that off the south west end above mentioned; but there is a large patch of coral rocks bearing about E.S.E., 4 or 5 miles, from the north end of Old Matacumbé, on which there is, in one part, only 2 feet of water. The reef extends to within less than 3 miles of Rodriguez, where there are only 7 or 8 feet water; and 3 fathoms is generally the deepest water in the channel all along. From the large shoal of Rodriguez, which forms a kind of elbow, the patches of coral rocks are said to increase in number and dimensions, forming double and treble reefs, with small channels of deep water through them; but they are imperfectly known.

On the west side of Rodriguez Cay, is a very small cay, named Cayo de Palumbas, or Dove Cay; it is gravelly, and of moderate height, and in the wet season affords good fresh water.

CAYO LARGO is of an irregular shape, and forms on its south-east side a remarkable projecting part, named Sound Point; opposite to which, and to the Cay of Rodriguez, is the Great Inlet of the Florida Reef, whose north side is formed by the Carysfort Reef. The indraught which sets into this place renders a near approach thereto very dangerous for large ships especially with a light or on-shore wind.

From the Great Inlet the Carysfort Reef extends to the N.N.E., about 16 leagues, forming within it the Hawke Channel. It has lately been surveyed, and is rightly considered to be one of the most dangerous reefs on the whole coast. Near its western edge there is lightvessel, bearing two brilliant fixed lights, visible 10 or 12 miles, on board of which there is a gong which is struck every five minutes.

According to the observations of Lieut. Smith, of H.M. ship Lark, it appears that this vessel, carrying two masts, is moored inside, or near the western edge of the Carysfort Reef, which shows *dry patches of sand and coral heads*, in many parts above water. It is in lat. 25° 12′ N., and long. 80° 16′ 30″ W.; the variation of the compass being 4° easterly. The northern edge of the Carysfort Reef is 6 miles to the northward of her; and she lies about 3½ miles from the shore. Cape Florida Lighthouse bears from the lightvessel N. by E. ½ E., distant 32 miles.

A range of islets and cays commences at the north end of Cayo Largo, and terminates at the point commonly, but erroneously, named Cape Florida. The most remarkable

is the small cay named by the Spaniards Las Tetas, or The Paps, from the small hills on it, but named by the English Pownal Cay, and Cayo Biscayno, the last of the Florida Cays, which lies to the southward of the cape, and about two leagues west from the Fowey Rocks, which are the first dry spot on, and the termination of, the reefs. Very good water may be obtained by digging at the south end of Biscayno Cay, provided the land does not cover clay, as wherever clay appears on the beach the labour would be fruitless. But sometimes, in the dry season, wells will yield no water; but then the watering places on the main, at 8 or 10 miles from the cay, may be depended on.

The Florida Reef and Cays have been surveyed by order of the U. S. Government, and in a report of the progress of the work, presented to Congress by Professor A. D. Bache, the Superintendant of the Survey, in 1850, it is stated that it has been found desirable for the more efficient execution of the work, to place signals on the most prominent of the dangers. As these are likely to remain for some length of time, although not intended to be permanent, we here give a list of them:—

1. A signal pole on *Turtle Reef*, bearing S.E. from Cæsar's Creek, 12 feet above the water, with braces 6 feet from the base; on the top a tin cone—the upper half red, the lower white.

2. A signal on the *Pacific Reef*, E.S.E. from Cæsar's Creek, of the same dimensions—the upper part of the cone painted red, the lower part white.

3. On *Ajax Reef*, commonly named the Hay Jack Reef, bearing E. by N. from Cæsar's Creek, of the same dimensions—the upper part of the cone painted red, the lower white.

4. On *Long Reef*, bearing E. of Elliot's Cay, also of the same dimensions—the upper part of the cone painted white, the lower part red.

Two beacons of similar dimensions were also put up on the Triumph Reef, and on the Fowey Rocks, but by some accident or design they were lately removed. Arrangements, however, have been made to have them replaced during the first calm weather, and their bearings and character will be as follows:—

Triumph Reef.—E. of Ragged Cays, painted red above, white below.

Fowey Rocks.—S. ½ W. from Soldier's Cay, white above, and red below.

It was attempted to place a signal or beacon on *Ledbury Reef*, but it was found impracticable.

The following large signals and beacons were put up last year and recently:—

Sombrero Cay.—36 feet high, barrel, braces 25 feet long.

Looe Cay.—38 feet high, barrel, braces 22 feet long; leans somewhat to the east.

West Sambo.—35 feet high, barrel, braces 25 feet long.

Sand Cay.—(Astronomical station)—23 feet high, barrel, braces 26 feet long; the sides recently boarded up by Lieutenant Rodgers.

Eastern Dry Rocks.—near Sand Cay; triangle, 18 feet poles.

Western Dry Rocks.—near Sand Cay; 18 feet poles.

Middle Ground.—also near Sand Cay; triangle, 22 feet poles; the E. and W. sides boarded up.—May, 1850.

SAILING THROUGH THE HAWKE CHANNEL FROM THE EASTWARD.—Biscayno Cay lies within the northern entrance of Hawke Channel, or the channel within the Florida Reef. For about 5 leagues north of the cay the ground is very foul, but there is nowhere less than 3 fathoms; though by keeping out, 5 or 6 miles from the shore, you will generally find 5 or 6 fathoms, fine sandy bottom; and, when you approach the reef, you may haul in towards Cay Biscayno, observing to give the reef a good berth without you, on account of several bad sand-bars on its inner edge. You will not find less than 3 fathoms anywhere within, till you come abreast the south end of the cay, where there is a small bank of 11 feet only; but care must be taken to give the cay a good berth, as a large flat stretches from it.

The Oswald Cays lie about 5 miles to the southward of Biscayno, and consist of two low spots of mangrove on a bank, and inaccessible to anything but a boat. The next cays are those named Lawrence, Paradisos, Enox, Pollock, and then the Soldier's Cays, named Mascaras by the Spaniards, which are 7 rocks just above water, with some mangrove and blackwood bushes on them: their trending is nearly to S.S.W. We come next to a little island, having two small hills on it, named Las Tetas, or The Paps. Saunders' Cut is the inlet to the south of it, where a small vessel, drawing about 4 feet, may enter into the wide sound, between these cays and the watering places on the main. About 6 miles S.S.W. of this, is an inlet named Black Cæsar's Creek, the bottom of which is of sand, which will likewise admit small craft into the inner sound: this is made by the

south end of Elliot's Cay. Next to Black Cæsar's Creek is Jennings' Cay, with two small cays at its south end, forming an inlet named Angel Fish Creek. From this inlet to Sound Point, the course is about S. by W., and the distance 4 leagues, South Point, as already stated, is the south-eastern part of Cayo Largo.

If bound to Cay Biscayno from the north, you can run close in with the beach until within one or half a mile of Bare Cut (which is the first opening north of Cay Biscayno Light, and is distant from same about 7 miles); you must then give the shore a berth of not less than one mile (be careful not to get in less than three fathoms water); your course will be S. by E., made good.

When Soldier Cay bears W. by N., steer for it until the lighthouse on Cay Biscayno bears N. by W.; then steer for the lighthouse until Little Soldier Cay (which bears south about 600 yards from Soldier Cay) is on with Soldier Cay; your course will be thence from N. by W. to N. by E., according to the tide, ebb or flood; but the points of the two Soldier Cays must be kept just on, or very nearly so (the little one to the east of the large one), until the sandy point of the beach (south end of Cay Biscayno) is opened out to the westward, past the high point of mangroves (N.W. and inner point of same), from 30 to 50 yards; this will bring you close to the northern sand-bar, thence off for the lighthouse, about N.W., keeping the sand-bars (on your right) close aboard, which at all times show themselves very plain. As you draw up with the point of the island, keep a little further off of the sand-bars, pass the point from 100 to 200 yards distant, and when the lighthouse bears N. 30° E., anchor. Here the channel is bold up to the beach, and over to the south bank, which forms the harbour, and in which you will have from $2\frac{1}{2}$ to 3 fathoms water.

To cross the reef at Cape Florida, bring the lighthouse to bear W.N.W., and steer for it until you get into 3 fathoms water, and then keep S.W. by S. until Soldier Cay bears W. by N., distant one or two miles, when you may anchor in 3 fathoms.

For sailing within the reef from the Soldier's Cay to the southward, the general rule is, to have a good look-out from the mast-head for all the heads and other shoals, which he will see, in a clear day, at least a mile off; and thus sailing, come no nearer to the Soldiers than 12 feet, and no farther east from them than 18 feet. A small round bank lies about E.S.E., a mile out of Saunder's Cut, which has only 9 feet on it; from this place to Black Cæsar's Creek, the sunken heads are very frequent, and the bar of that creek runs a great way out. Right abreast of the spot, and north of the bar, is a very fine anchorage in 22 feet, close to the back of this reef, which makes the inlet. The bottom of Black Cæsar's Creek is sandy, but thence to the S.W., it gradually changes into a kind of soft marl, of the consistence of dough. When you are clear of Angel Fish Creek to the south, the same rule of keeping within 18 or 12 feet depth for the channel is to be observed; but, after all, a careful inspection of the chart, together with a comparison of it with the course of the land you sail by, and especially a good look-out, will answer your purpose better than any directions that could be given.

Sound Point is the only spot that may be said to form a true promontory from the Spring in the Rock. It is off Sound Point, or rather on the extensive reef that lies before it, that almost every vessel cast away has met her fate from the parties who lie in wait for such disasters. This reef is called the Carysfort Reef from H.M.S. of that name having been run there by the pilot, on the 23rd of October, 1770; though ultimately brought off through the skill and perseverance of the Master, Mr. Hunter. That part of the reef on which this vessel ran aground is very uneven, having between some of the patches 3 or 4 fathoms water. This reef, now indicated by a vessel bearing two lights, has been already described.

From the north end of Sound Point to Rodriguez Cay, the course and distance are S.W., 9 miles. There is a good harbour for small craft off the north-west part of the cay, formed by a reef running off from its nort-east end, and another good place for shelter to the south-west of it, but neither has a greater depth than 9 feet at low water. Tavernier Cay, or Tabona, is only a large thicket of mangroves, without any dry soil on it, and affords only some aquatic birds and their eggs.

There is a sheltering place or roadstead for small vessels between the south point of Cayo Largo and Tabona, within a ridge or reef, on which are generally seen some turtle-crawls, but unless by timber-cutters it is seldom occupied. In going southward from South Point, observe the rule already given, keeping within 18 and without 12 feet. Though the channel here is wide, yet a man must be kept at the mast-head to discover points, as there are some rocks on this tract, especially near Tabona or Taver-

nier Cay. This island, wherein is a small harbour within a reef, like that on Rodriguez, has little or no high ground, and affords land-crabs, some few doves, and other birds. There is a small creek, scarcely a musket-shot wide, which lies one mile to the west of it, at the south point of Cayo Largo; but it admits only boats, and is named Boca Herrera. From the south-west part of Cayo Largo, to the island named New Matacumbé, the course is S.W., about 8 miles; you pass by Long Island with the little cay at its south end. New Matacumbé has nothing remarkable, except a well of good fresh water on the east end. Off its south-west end lies a small drowned mangrove island, named Umbrella Cay; a channel, 10 feet deep, runs in to the south of it, and extends up to within the larger island; but there being nothing worthy of notice on this cay, it is very seldom visited. In coming this way from the north-eastward, the channel is in general deeper than before; but the same rule of keeping without 12 and within 18 feet still holds good; but observe that directly abreast of New Matacumbé, within a mile and a half to the eastward of the land, are several dangerous sunken heads, named the Hen and Chickens, which require particular attention.

The next to the south-westward is the Island of Old Matecumbé, remarkable for being the most convenient and best watering-place on all this coast. On its east end are several wells in the solid rock, which appear to be natural chasms, yielding excellent water in abundance; there are also some ponds near them which afford water; insomuch that, in a wet season, all the east end of the cay is overflowed, and sufficient water may be procured to supply a whole fleet. There are likewise some ponds and wells at the west end, but the water is of a much inferior character. This island was one of the last habitations of the Caloosa nation. About a mile from its N.E. end, on the extremity of a reef, lies the small bushy gravelly cay, named Mataoza or Indian Cay, which is the leading mark for finding the watering-place on Old Matacumbé. The channel to the south of New Matacumbé is so plain, that the best direction is the eye. Observe that the tides, being very rapid, require particular attention in going in or out; and that the channel is very narrow, having only just room enough for a small vessel to turn to windward.

From the south-west end of Old Matacumbé to the west end of Cayo Vivoras, or Viper Cay, the course and distance are S.W., about 7 miles; the depth of water is from 16 to 18 feet, sandy bottom; but you must be careful to give the Vivoras a berth of at least a mile and a half. From Vivoras S.W. by W., 12 miles, brings you to a contraction of Hawke Channel, between the outer reef and Cayos de Vacas: your depth is generally 18 feet, the bottom is sandy, and a broad bank runs off from the Vacas Islands. At this contraction of the channel the course must be altered to W.S,W., going through the like depth of water for five miles. In running this last distance, care must be taken to to avoid the shoals lying off the S.W. part of Cayos de Vacas, already described.

The next islands are named the cays of Bahia Honda, which extend E.N.E. and W.S.W., 6 or 7 miles. Hence to Cay West the course is W.S.W. $\frac{1}{2}$ W.; the depth of water from 17 to 23 feet. Cay West extends about east and west 6 miles, having a shallow bank before it, which extends round its west end, near which is a well of very ordinary water. All these cays abound in water, have plenty of venison, and in some of them honey is found. From abreast of Cay West, a W. by S. course, 5 leagues, and W.S.W. $\frac{1}{2}$ W., $8\frac{1}{2}$ leagues, will carry you to the west end of the channel, abreast of the west end of the quicksands, which extend westward from Cayo Marques. This bank of quicksands may be always seen in the day-time, it being very white, and therefore may be easily avoided.

It is common for small vessels from the northward, and bound into the Gulf of Mexico, to take advantage, in favourable weather, of the counter-current which sets over soundings near the Florida Reef, to the south-westward and westward, excepting when the wind is at North and West. The rule is to keep in the coloured water by day, and off to the stream by night. To accomplish this with advantage, a land-fall should be made early in the morning, in order to have, throughout the day, advantage of the eddy. The safest way, however, is, with light and westerly winds, to make the Double-headed Shot Cays and the coast off Cuba, where you are likely to find but little current, and may have the advantage of the land-breezes from that island.

THE TIDES.—The tide ebbs and flows here regularly about 6 feet, and the time of full sea, at full and change of the moon, is 8 o'clock, as it is everywhere from the Vacas to the Dry Tortugas; the tides setting as is shown by the darts in the chart. The tides from the Vacas north-eastward rise not quite so high; and the time of full sea is

from seven to eight o'clock, being later as you come westward. To the northward of Cayo Biscayno, the stream on soundings is much influenced by the wind, when it blows fresh; but with moderate breezes the ebb sets northward, and the flood southward; a due attention to this will contribute to shorten a passage over soundings to the reef.

CAPE FLORIDA TO THE MISSISSIPPI.

We may remark that of the west coast of Florida no survey has yet been made, and, as a general rule, ships should avoid it, particularly as there can be no sufficient cause for visiting it, there being no ports of commerce or harbours capable of admitting a large ship. The following instructions for this coast have been gathered from various sources, and should not be too strictly relied on, as from the paucity of information, it is impossible to give any very complete description. San Carlos and Tampa Bays are the only places that have been examined, and that in a not very satisfactory manner.

At present a very elaborate survey is being carried on by the United States coast surveyors, of the whole of Florida, but as it was only lately commenced, no very great advance has been made. A base line has been measured at Biscayno Cay on the east coast and also at Cape Sable, and the triangulation of the whole of the Florida Cays, is in progress. A reconnoisance of Cedar Cays has also been made, and it is proposed to establish a lighthouse on Sea-horse Cay, one of the larger islets of the group.

From Cape Florida to Cape Sable or Point Tancha in lat. 25° 7′ N., and long. 81° 3′ W., the distance is about 24 leagues in a south-westerly direction. The coast is all low land, and the water is so shallow between it and the cays of the Florida Reef, that it was with great difficulty that it could be approached for the purpose of surveying.

Mr F. H. Gerdes, one of the surveyors of the United States Coast Survey, thus describes the shore from Cape Florida to Cape Sable:—"The southern part of Florida, as is well known, consists chiefly of everglades, or vast and enormous water prairies. The bottom of most places where I entered the glades had a rocky foundation,and was covered only slightly with soft soil, the thickness of which did not exceed six inches, apparently of an alluvial nature. The depth of water varied from 1 to 4 feet, and the water was fresh, drinkable, and of a brownish colour. Numerous hummocks or patches of elevated ground lay all over the glades, like islands in a bay, which are from 1 to 3 feet above the level of the water, thickly covered with wood, and exceedingly fertile.

"Around the everglades, along the Atlantic coast, as well as on the branch of the gulf towards the Florida Cays, runs a belt of solid ground, to the extent of 8 or 10 miles in breadth, bordering the glades on the inside. It is generally thickly wooded. The soil is barren and stony, and in some places rocky. Marshes extend for a few miles along the coast, and some hummocks and fertile spots are found at several projecting points. Among the latter the hunting grounds occupy the first place. Here cultivation has very sparsely begun, though the products of the soil, in sugar, rice, corn, limes, oranges, olives, &c, was very rich. On the Miami River are also some small plantations, that seemed, before the late Indian outbreak, to thrive well. For 5 or 6 miles to the eastward of Cape Sable the country is also very productive, and here alone is open, and consists of well-watered prairie land intermixed with fine groves of trees. The stony and barren tracts along the coast are covered chiefly with pine growth, and the ground, in general, is plentifully filled with arrow root bushes, called in this section by the Indian name of *coonty*. This is a product which is little used as yet, but which, I presume, will become in time a source of wealth to the landowners. The navigable streams from the glades to the Bay of Florida, with water power of generally four or five feet fall, will facilitate the manufacturing of the article. It grows in very great abundance, and is of an excellent quality, perfectly equal to the Bermuda arrow-root, and can be delivered, with large profits, for ten cents per pound, when the imported article sells here in the country for 60 or 75 cents."

On Cape Sable there is a small settlement, and a fort named Fort Poinsett. From hence the coast runs to the N.N.W., about 64 miles, to Cape Romano or Punta Larga, in lat. 25° 47′ N., and long. 81° 57′ W. Between these projecting points the coast

bends inwards, and forms what is now named Chatham Bay, but formerly bore the name of the Bay of Juan Ponce de Leon, who was one of the first discoverers of Florida. It has so very little water on it, that none but turtlers and fishermen can approach the land.

From Cape Romano a shoal runs off to the southward, and south-westward, about 7 miles; and the coast, turning to the eastward, forms a bay in which the depth is 2 fathoms. Here small vessels of light draught can obtain shelter from winds of the N.E. and N.W. quarter.

From Cape Romano the coast runs about N.W. $\frac{3}{4}$ N., a distance of nearly 11 leagues to Cay Sanibel, and is all clean with 3 fathoms water at 2 miles from the shore. Under the southern part of this cay there is good sheltered anchorage in 2 fathoms, the situation of which may be known by a palm-tree, two leagues to the southward of it, as it is the only conspicuous palm-tree on all this coast. To take this anchorage the lead must be used freely, on account of the shoal ground extending about 4 miles from the south end of the cay.

SAN CARLOS.—A line of low cays succeed Cay Sanibel, and border the coast at the distance of about 7 miles. Within these is the Bay of San Carlos, into which several rivers discharge their waters, the principal of which is the Caloosehachee: these rivers, although they drain a considerable tract of country, yet are too shallow at their entrance to admit any but boats. San Carlos Bay is of considerable extent, but will admit vessels of only 8 feet draught, as the shelter is but little; and although the holding-ground is moderately good, you are obliged to shelter yourself in the bends of the bay opposed to the direction of the wind.

There are various passages between the cays opposite St. Carlos Bay, the principal of which, named Boca Grande, is between Pine and Casparillo Cays. In this passage there are about 14 feet water, and in running in to reach Charlotte or Carlos Harbour the course is about E.N.E., keeping the lead going. This channel has a bar at its entrance, upon which the depth is generally from 12 to 14 feet water; soon after passing which you get into about 5 or 6 fathoms. It is said that the locality of this harbour may be known by a cluster of trees to the northward and westward of the entrance.

Through Boca Grandge the current sets in and out at the rate of $2\frac{1}{2}$ knots; running in 7, and out 5, hours. Charlotte Harbour has some fine oyster beds and the greatest variety of fish, wild fowl, and deer, on the whole coast.

TAMPA BAY.—From San Carlos Bay the coast trends N.W. $\frac{3}{4}$ N., about 43 miles, to Tampa Bay, and has a succession of low cays trending along it at the distance of about 4 miles from the shore. The whole of this coast is clean, with the exception of a sandbank extending out from what is called the Boca, or Mouth, of Sarasota Inlet, which is an opening between two cays, about 20 miles before you reach Tampa Bay; upon this bar there are about 10 or 12 feet water. In sailing along this coast you will find 4 fathoms at the distance of 6 miles, consequently there is no danger if you keep the lead going.

In Tampa Bay there is sufficient water for frigates, there being within it from 5 to 6 fathoms water, but it is impeded by a bar at its entrance, which renders the access somewhat difficult, consequently it will always be necessary to take a pilot. In the entrance are several sand-banks and islets, between which are three channels named the West, South-West, and South-East Passages. The two first have plenty of water on their bars, there being on the former $3\frac{1}{4}$ fathoms, and on the latter $2\frac{3}{4}$ fathoms; besides which the channels are clear, and to take them there is little or no difficulty, as the shoals are distinctly seen at high water, and at low water are dry.

When running into Tampa Bay by the Ship Channel, bring Mullet Cay to bear E. by N., and Egmont Cay E. by S., and keep in 3 to 5 fathoms water, mid-way between the cays, leaving Egmont Cay on the starboard and Mullet Cay on the port hand. The N.E. point of Egmont Cay is bold-to: the bar extends from this cay about 2 miles, and has on it at high water about $2\frac{1}{2}$ fathoms.

If running in by the S.W. Passage, bring the south-west end of Egmont Cay to bear N.E. by N., and run for it, in $2\frac{1}{2}$ and 3 fathoms at low tide.

There is one tide in Tampa Bay in 12 hours. The tide runs in 6 and out 6 hours. On Egmont Cay there is now a lighthouse showing a fixed light, which cannot but prove of great assistance to vessels running in.

From Tampa Bay the coast trends round to the N.N.W. $\frac{3}{4}$ W., a distance of about 31 miles, to the Anclote Cays, and is all low, and clean, with a depth of about 6 fathoms at

the distance of 3 leagues from the land, so that there is no difficulty in coasting along, if the lead is kept going. There are several cays and islets lying along it, at the distance of 4 miles from the land, among which are several shoal spots.

The Anclote Cays lie along the coast at the distance of about 4 miles, and are about 8 miles in extent, and three in number. Off its southern part, and abreast of St. Clement's Point, there is good anchorage in 3 fathoms water.

From the Anclote Cays to the River Suwannee the distance is about 60 miles, and the coast is so low that in sailing along you will lose sight of the land soon after leaving the cays; the water is also so shallow that there are only 6 fathoms at 8 or 10 miles from the land. At about 10 miles before reaching the river you will see a group of low cays named the Cedar or Sabinas, which were examined in June, 1802, by the merchant-pilot, Josef Vidal, who determined the position of the southernmost to be lat. 29° 4′ N. This group of islets is composed of nine principle ones, with many others, occupying a space of 21 miles from W.N.W. to E.S.E., and 14 miles from north to south. They are all surrounded by banks, which extend out a considerable distance to sea; for, from the westernmost islet, the bank runs out 12 miles to the W.S.W., and from the southernmost, 14 miles to the southward. Between the islets and banks, there are channels formed of more or less extension, with 3, 5, 8, and 12 feet water. The vessel in which Vidal was, anchored to the eastward of the south-westernmost island, in 12 feet.

The Cedar Cays bear the names of Sea-horse, Bird, Snake, Depot, Big, &c., and are dangerous to approach on account of the shoal which extends off so far to the south-westward of them. When approaching them keep in 6 fathoms, and make a frequent use of the lead.

The River Suwannee lies in lat. 29° 18′ N. and long. 83° 3′ W., and has an entrance much obstructed by a great number of islets and sand-banks. From hence the coast runs to the north-westward, about 34 miles, to Deadman's Bay, and has various small islets lying off it. Into Deadman's Bay the River St. Pedro falls.

From the N.W. point of Deadman's Bay the coast bends inwards, and runs to the N. 62° W., a distance of 33 miles, to Casinas Point, the east point of the River Apalaché, off which a rocky reef extends about 2 miles. In the intermediate space, near the shore, are two rocky islets, and a point, named Pines Point. The water all along the coast is very shallow, as it is in all this bight.

ST. MARK'S or APALACHE is a port of entry, and lies on the River St. Mark, near its union with the River Waknlly, which together form the River Apalaché. On Point Casinas, its eastern point, there is a fixed light at 75 feet, visible about 18 miles, which if brought on a bearing of N.N.W. will lead directly to the entrance.

In this harbour there are two bars, the outer one of which is connected with the shallow ground extending from either side of the entrance, which afford considerable shelter to the anchorage within. This is the only sheltered anchorage on all this coast. In consequence of the bars it will always be requisite to obtain a pilot.

In the Nautical Magazine for 1836, there is a communication from Mr. Samuel Martin, of the barque Wilkinson, of Whitehaven, who says, "I would advise every one, on coming in for this place, to keep the Florida shore on board, and not upon any account, to risk a fall to leeward of Cape St. George; for should a vessel get in between this and Cape St. Blas, and a gale of wind from the south-west comes on, she would be placed in imminent danger between the reefs off the capes. By keeping the bay open, with a beating wind, you may safely stretch into 7 or 8 fathoms; and your lead will warn you of all danger, if kept going, as the soundings are regular, and may be obtained at a great distance from the land. After making the South-west Cape, give it a berth of at least four leagues, to avoid the South Cape Shoals, so called, and when it bears due West, 12 miles, from you, you will have the lighthouse about N.N.W., on which course you may safely run into 3 fathoms; but attempt to advance no further, as the bar is very shoal. With N.W. winds it has not more than 6 feet upon it; but S.W. winds having a contrary effect, raise the tides to 12 and 13 feet. The bar has a harrel-buoy at present lying on the shoalest part, about 5 miles south from the anchorage. Extending east and west, there is a dangerous shoal lying off the Okalokana River, not inserted in Mr. Gauld's or other charts.

"Vessels drawing from 10 to 11 feet should be prepared with a good stream cable, as it may be of the greatest service on getting over the bar, should your vessel ground, without the assistance of the stream. This was my case; I lay 12 hours at anchor, and might have laid a long time on going in, and 36 hours coming out, heaving at inter-

vals, as the warp slackened; with perseverance you may get over, when otherwise you may have your vessel in danger. In fine weather the pilots advance in very small boats, but when blowing heavy in a small sloop-boat.

"The distance that soundings, of 5 fathoms, may be obtained from the land, on coming in is about 20 miles from the northern shore. When the wind is N.W. the harbour is not to be attempted on any consideration; with S.W. winds it may be entered safely with a vessel drawing from 9 to 11 feet. The ground may be trusted for holding, in a gale of wind from the N.W. which often prevails. If the wind answers to get once over the bar, you may run the vessel on, and with your stream anchor ahead, about 48 or 50 fathoms, you will be ready for the wind at S.W. which often causes a heavy roll of the sea, when you will be enabled to heave occasionally as your warp slackens."

From St. Mark's the coast runs to the south-westward about 17 miles to the South-west Cape, and is all low with a few inlets and cays. A shallow bank borders this coast the whole distance, and runs off from the cape about 4 miles to the southward, and this latter should be approached with caution, especially when running from the south-west for St. Mark's.

At about 6½ miles, E. by N., from the South-west Cape, there is said to be a 3-feet shoal, the eastern end of which bears South from St. Mark's Lighthouse. The depths from the cape to St. Mark's are from 2½ to 3 fathoms, with a rise of the tide of about 4½ feet.

From the South-west Cape the coast runs to the W.S.W., about 50 miles, to Cape St. Blas, in lat. 29° 42′ N. and long. 85° 25′ W. Along this coast are Dog, St. George's, and St. Vincent Islands, within which there is excellent anchorage in what is named St. Georges's Sound, access to which is obtained through the passages between the islands. In this soumd is the rising port of Appalachicola, from whence large quantities of cotton are annually exported to Liverpool.

ST. GEORGE'S SOUND.—Dog Island forms with St. George's Island the south side of St. George's Sound. Around the east end of Dog Island is the eastern entrance to the sound.

Between the east end of St. George's Island and the west end of Dog Island is the Middle Pass into St. George's Sound, which is but 3 miles wide, and difficult for strangers to find, as the points of both the islands are low sandy beaches, and there is a sand beach on the main directly in front of the passage, so that at the distance of 3 or 4 miles it looks like one continued beach.

On the south west end of Dog Island stands the lighthouse of the Middle Pass, which shows a light revolving in about three minutes, and bearing from the bar N. ½ E., distant 2½ miles. To distinguish it in the daytime from the lighthouses of St. Mark's and St. George's, it has a black horizontal stripe near the top.

The Middle Pass into St. George's Sound is the channel into the port for large ships, as it has scarcely any bar, and a good depth at low water. Ships drawing 10 or 12 feet can get up to about 12 or 13 miles of the town to load. The gulf inside is perfectly safe, and will hold a large fleet of ships; the ground also is good and soft, and it is an excellent place as a rendezvous for cruisers.

After making this passage, steer for it, keeping most towards Dog Island, as the channel lies altogether on the Dog Island side. You will soon see a large green buoy, which lies in the best water on the bar; pass close to this buoy on either side, and stand in N.N.W., along Dog Island Reef, which can be plainly seen, until the eastern point of St. George's Island bears about S.W. or S.W. ½ W., then haul up the sound for the shipping, say about W.S.W., continue on this course until the eastern point of St. George's Island bears about E., 2 miles distant, and a black buoy on shore, well under St. George's Island, bears about S.E. ½ S., half a mile distant, when you may anchor in from 2 to 2½ fathoms.

At a short distance outside the green buoy is a barrel buoy. There is also a black buoy on Dog Island Reef, and a white buoy on the eastern extreme of St. George's Island Reef. Reliance cannot altogether be placed on these buoys as they shift their position with every strong breeze. They are placed there by the pilots; but as the channel is perfectly plain, and the reefs are visible, they would in any case be of little use.

Between the south-west point of St. George's Island, and St. Vincent Isle to the north of it, is the western pass into St. George's Sound, the bar of which is about 60 feet broad, and of hard sand. Vessels bound for the West Pass ought not to draw more than 12

feet; for, when over the bar, if a vessel loads in the bay, very little more can be found. A vessel of 12 feet may lie aground on the soft bottom. There are vast numbers of oyster beds all along shore.

When the south point of St. George's Island (which lies to the southward of Appalachicola Bay) bears North, two leagues distant, you will be in 2½ fathoms. From these bearings and depth of water, steer N.N.W., or N. by W., until you make the large black buoy*, which can be seen at the distance of four miles; by keeping the buoy close on board, you have the best water; the course from the buoy is due North, until you bring the three tall trees on St. Vincent's Island to bear N.E., then run for them. The entrance then being fairly open, steer for the point of St. George's Island, or between the point of that island and St. Vincent; you will have three fathoms when over the bar, deepening gradually; and between the Islands of St. George's and St. Vincent, you have 8 fathoms when fairly in. When past the point of St. George's haul to the eastward, and keep from one-half to three-quarters of a mile distant from St. George's Island. The water will shoal in this course to 2 fathoms, soft bottom, when you had better come to an anchor and wait for a pilot, which you will obtain by hoisting the usual signal.

When off the entrance, in 6 fathoms, no inlet can be discovered between the two islands, but the place may be known by the bearings of the land. It is a low sand-beach, having a hummock of bushes about one mile from the west point of St. George's Island, to the westward of which are four umbrella trees, the two easternmost standing 6 or 8 feet apart, at top connected, and at a distance having the appearance of one tree. To the west of these trees is a hummock of palmetto trees, which stand nearly on the extreme west end of St. George's, which are considerably larger than the hummock of bushes before mentioned; and these, when distant so far that you cannot see the beach, that bearing N.E., appears as separated from the other land, and to form an island by itself, but when bearing N.W., appears connected with the Island of St. Vincent, which is thickly wooded on the eastern end. This hummock is, however, on St. George's.

The south point of the Island of St. George's is thickly wooded, and can be discerned when in ten fathoms, bearing N.E.

Should you have a foul wind, and be obliged to turn to the windward, keep the Island of St. George's on board; when fairly to the westward of the south point, the water is good near the beach, and soundings regular.

Directly off the south point of St. George's, there is a dangerous shoal of 2 or 3 leagues extent.

On Cape St. George there is a lighthouse showing a fixed light at 65 feet, visible 15 miles. The shoal from the cape makes off at least 6 miles from the south part of the island, and has not more than 5 or 6 feet of water on it, and perhaps less. On the western edge of this shoal the soundings are irregular, from 3 to 4 and 2 fathoms.

APPALACHICOLA is situated on a bluff at the mouth of the Appalachicola River. A broad estuary named Appalachicola Bay, is formed by the river, and lies on the northern side of St. George's Sound. The River Appalachicola is navigable for small vessels to the junction of the Chattaboochee and Flint Rivers. The Chattaboochee, the largest branch, is navigable for boats nearly 400 miles from the Gulf of Mexico. The Town of Appalachicola is a port of entry, and is also a very considerable cotton mart.

The following directions for Appalachicola Bay are by Captain Joseph Cornforth, of the brig Harbinger, Newcastle-on-Tyne:—

"From Cape St. Antonio, or the Dry Tortugas, steer for the middle of St. George's Island. The soundings will be regular as you approach the land, which is extremely low all about, and they will shoal gradually. The above course will take you to the eastward of St. George's Reef, extending 8 miles from the south point of St. George's Island. The soundings near the west edge of this reef are very irregular and not to be depended upon. By running along the island you will meet the reef, and by keeping your lead going it will carry you outside; for, should you fall to the westward, and make Cape St. Blas, or to the westward of it, and a south-west wind come on, and blow hard, you are then between the two reefs, and the current setting along St. Blas Reef, and winding into Appalachicola Bay, you will find some difficulty in keeping to windward; but by being to the eastward of St. George's you will have the current setting to the

* An island, named Flag Island, formerly existed here; but being swept away by a hurricane, the buoy was placed on its remains.

southward and westward, towards the gulf, and further to the eastward the stronger you will feel it going to windward.

"When I was bound to Appalachicola on my last voyage, I made Cape St. Blas, in consequence of the chart being wrong. Although the water was smooth and the breeze fresh, it took me from 4 p.m. till 4 a.m. next morning to double the reef. At 3 a.m. next morning we found our soundings vary from 3 fathoms to 7, then a quarter less 3, then 5, and so on the whole of the time."—*Naut. Mag.* 1837, p. 539.

CAPE ST. BLAS is a low point running out in a southerly direction about 2 miles,* and has a lighthouse upon it, 2 miles from its extremity, which is 65 feet high, and show a revolving light at 75 feet above the sea, visible 15 miles. From the cape a shoal runs off about 3 miles in a S.S.E. direction; there are also some patches of 3 to 4 fathoms lying S.W. by S. to S.S.E. $\frac{1}{2}$ E. of the point, the southernmost of which lies 13 miles from the point, and has 5 fathoms on it. Between these shoals there are channels of 7, 8, and 9 fathoms water.

ST. JOSEPH'S BAY.—From Cape St. Blas the coast runs to the N. by W. about 16 miles, and forms a tongue of low land, in some places so narrow as to be not more than 2 cables' length across. Behind this tongue of land is the Bay of St. Joseph, which, with the exception of Pensacola, is considered the best anchorage on all this coast, as when inside you may lie in a depth of 5 to 6 fathoms water.

The tongue of land protecting St. Joseph's Bay from the westward has several breaks in it, through which in stormy weather, the waters of the sea and bay unite with each other. Along it there is good anchorage in 6 or 7 fathoms, well protected from the eastward, at from $1\frac{1}{2}$ to 2 miles off the shore.

The width of the bay at the entrance is about 3 miles, and here there is a bar on which at low tide the depth is 15 to 17 feet, but when inside there is sufficient water for the largest vessels, and moderate shelter excepting during the winter, when the winds prevail from the S.W. and N.W. quarters and raise a heavy sea; there is also a rough sea on the bar.

To make the bar of St. Joseph, it is necessary to coast the tongue of land in a depth of 4 and 5 fathoms, until you pass a small tongue of sand at a little distance from the opening of the bay, and thence steer N.E. and E.N.E. for the interior of the bay, coasting always along the tongue, near which the water is deepest.

Lieutenant C. Powell, of the United States surveying brig Consort, has lately surveyed a new passage into St. Joseph's Bay, the entrance to which is $2\frac{1}{4}$ miles, W.N.W., from the lighthouse.† "Bring two pine-trees, on the eastern side of the bay, painted white, in range (they then will bear N.E. by N.) and run for them; keep this course on, until you get the eastern shore on board, when you may steer for the town, keeping the eastern shore on board until you get to the southward of the lighthouse."

The Bay of St. Joseph is about 20 miles long and 7 broad, and as you sail up towards its south-eastern end, the water shoalens gradually. At the distance of about 2 miles from the head of the bay there is a picturesque island covered with oak, cedar, and palm-trees. Along the eastern shore of the bay are various lagoons and ponds.

ST. ANDREW'S.—From St. Joseph's Bay the coast runs about N.W. by N., 12 to 15 miles, to the bar of St. Andrews, and must not be approached nearer than 5 miles, as it is shoal to a considerable distance off. This shallow ground is named the Middle Ground, and although it may in general be perceived by the whiteness of the water, it should not be approached except by a frequent use of the lead.

St. Andrew's Bay is of easy access, and affords good anchorage within it, sheltered from all winds. An arm of the bay extends 20 miles parallel with the coast at the distance of one mile from the sea; and at the distance of 10 miles from the sea another arm, of from 1 to 10 miles wide, extends east for about 30 miles. The main body of

* In the months of August and September, 1850, there was a succession of heavy gales in this part, which caused a vast amount of mischief to the shipping, and carried away much land from the projecting parts of the coast. Cape St. Blas was stated to have suffered severely as nearly the whole of it was washed away to abreast of the lighthouse, which although left standing, was in so shattered a condition that it was expected to fall. The above description of Cape St. Blas must, therefore, not be too literally received.

It was stated in a newspaper paragraph, dated January 1st, 1852, that the lighthouses of Cape St. Blas, Dog Island, and Cape St. George, had been carried away by a recent gale but that measures would be immediately adopted to re-establish them. Until that date no lighthouses or other marks had been substituted for either of them.

† This light has since been removed.

the bay extends 12 miles northward, and has an average breadth of from 2 to 5 miles. There are some fertile settlements on the borders of the bay.

Crooked and St. Andrew's Islands cover St. Andrew's Bay, by which are formed three entrances to the sound leading to the bay. The opening between Crooked and St. Andrew's Islands forms the eastern entrance, on the bar of which the depth is 18 feet, and the channel, of one-sixth of a mile in width, is close to Crooked Island; the distance between the islands is about two-thirds of a mile. The middle or main entrance is near the western end of St. Andrew's Island, and has a depth of 21 feet, in a channel 200 yards wide. At the distance of two miles, N.W., of the latter, is the western entrance, having a depth of 10 feet on the bar.

This bay is very large, but hitherto not much frequented, except for temporary shelter in bad weather. It is said to be shallow, but there are 3 fathoms in the sound from the main to the eastern entrance, and good shelter under St. Andrew's Island.

ST. ROSA'S BAY.—At the distance 46 miles, W.N.W. $\frac{1}{4}$ W., from St. Andrew's Bay is the entrance to the Bay of St. Rosa. Along the intermediate shore the trees are very thick, and close to the beach; and there are also several hillocks of red and white sand.

On the west side of St. Rosa's Bay is the east end of a long narrow island, named St. Rosa's Island, which extends along the coast in a W. by S. direction, about 14 leagues, and is so low that the seas, in gales, wash its tops, and is nowhere more than one-fourth or one-third of a mile wide. There are many hillocks of white sand upon it, and some scattered trees. The eastern end of the island is a very low sandy point.

The east point of the entrance to St. Rosa's Bay is known by some bright reddish coloured bluffs, which are upon it. The channel or mouth of the bay is very narrow, and has a bar on which there are only 6 or 7 feet water. The passage over the bar must be made with the vessel's head to the N. by W., keeping in the middle of the channel until the east end of the Island of St. Rosa is passed, and then steering N.W., until fetching into a berth sufficiently sheltered, when the anchor may be let go. St. Rosa's Bay is of extraordinary extent, being about 23 miles in length to the eastward, with a breadth of 4 to 6 miles: the greatest depth in it is 3 and $3\frac{1}{2}$ fathoms, which are found only when you are to the west of the red cliffs at the entrance; that is to say, to to the distance of about 2 miles from the bar: the other parts of it are full of shoals and old stumps of trees, so as to be passable for canoes only.

PENSACOLA.—From St. Rosa's Bay you follow the coast of St. Rosa's Island until you reach Pensacola Harbour, the east side of which is formed by that island. This is a fine harbour capable of sheltering a large number of vessels, which anchor in 20 to 40 feet immediately off the town, under shelter of St. Rosa's Island from the southward, which is an excellent protection against all winds blowing from that quarter. At the entrance of the harbour is a bar of 21 feet water.

The east point of the entrance to the bay is named Point Siguenza, and is the western extremity of St. Rosa's Island. To the north-westward of this point there are some red cliffs or breaks *(barrancas)* on the coast, which are the highest land of this part; at these cliffs there is a fort where the pilots reside. On the west side of the entrance is Foster Island, which, like St. Rosa's Island, is narrow and runs along the coast to the westward.

Immediately to the N. by W. of the bar is the lighthouse which stands on an eminence 40 feet high, and shows a light at 80 feet above the sea, revolving every 70 seconds, which can be seen about 17 miles off. Its position is lat. 30° 20′ 17″ N. and long. 87° 16′ 15″ W.

The entrance between St. Rosa's and Foster Islands, is about $1\frac{1}{4}$ mile wide. After passing the bar the entrance to the bay is between the Barrancas and Point Siguenza. This port would be difficult to recognise, were it not for the lighthouse and bluffs, which cannot be easily mistaken.

To the west of Siguenza Point, a shoal, named the Angel Shoal, is represented to extend from the western coast, with two sandy islets on it. This shoal extends out to the south about a mile and a quarter, and then runs off a mile further to the south, in a hardy sandy bank with 12 feet water over it, which thence runs across to the east, the whole distance to the Island of St. Rosa, and forms the bar, the greatest depth on which is 21 feet. This bar is little more than half a mile broad; and having passed it, there are immediately 4, 5, 6, and 7 fathoms. The bar is not the only difficulty that presents itself in entering Pensacola Bay; for within, and abreast of, Point Siguenza, there is a shoal of 10 feet water, very steep-to, and which extends more than half a mile

from it; it, consequently, lies out to mid-channel of the entrance. The passage in is to the westward of this shoal.

Vessels coming from the eastward should keep in 7 fathoms water until the light-house bears by compass N. by W., when they can stand in for the bar, until in 3½ fathoms, which is the shoalest water on it at low ebbs, with the light bearing N. by W. If drawing much water, it is not advisable to attempt to enter in the night time on account of the Middle Ground on the east side of the main channel, one mile inside the bar, on which are not more than 7 feet, and the channel round it is very circuitous.

When making the land it is advisable to keep off 4 or 5 miles until the lighthouse is made, which cannot be seen until nearly opposite, as the trees on St. Rosa Island to the eastward, and on the main to the west, obscure it from the river.

To come in over the bar, on which generally there are 4 fathoms, bring the light to bear N. by W. and run directly for it, until over. The bar is about 600 yards across, and has, or had, a buoy on it, and you will know when you are over it, as the water will deepen to 5 or 6 fathoms. Now run N.W. until the lighthouse bears North, in order to avoid the Middle Ground, and run for it until within the point of Rosa Island, then haul up the eastward, until the west end of Rosa Island bears S.W., when you may anchor in 4 or 5 fathoms safe from all winds.

Small vessels drawing less than 14 feet, can bring the light to bear N. ⅔ W., and steer for it until within half a mile, when they may anchor with the wind off shore, but if they have a fair wind, they can steer E. by N., until sheltered by Rosa Island, when they can anchor in a good harbour until daylight.

Vessels coming in or going out on an ebb tide, should (preserving the necessary depth of water) keep the eastern edge of the channel, as the tide runs to the south-west across the Caucus Shoal, and the flood sets directly over the Middle Ground.

Vessels drawing less than 10 feet, can pass through a small channel between the Middle Ground and the point of Rosa Island.

The entrance to this bay is easy to take; for almost every day there are shifts of wind from the S.E. and S.W. quarters, which blow from a little before mid-day until night-fall. It is, however, recommended always to take a pilot on account of the bar.

The Bay of Pensacola is an extensive inlet, entirely land-locked. There are several rivers which fall into it, of which the largest, named the Escambia, is navigable for shallops, but to the distance of a few miles only.

Mr Gauld has remarked that, on the coast hereabout, he observed a stronger current in the winter time than in the summer time, "occasioned by prevailing N.W. and N. N.W. winds, which immediately cause a general ebb from all the bays and inlets on the coast, and sets to the eastward a point or two off-shore, at which season a southerly wind, which is a dead wind on the coast, is the forerunner of a N.W. wind in a few hours; so I would advise no one, knowing themselves to be to the westward of Cape St. Blas, to haul from the land, farther than in 17 or 16 fathoms of water, lest they should not be able to get the land on board again, from the above-described current and N.W. winds."

From Pensacola Bay the coast runs 16 miles, S.W. by W. ½ W., to Perdido River, the entrance to which is narrow, with a bar of 4 or 5 feet, but it widens considerably afterwards, bearing in the first instance towards the N.E., and then towards the N.W. Hence in sailing along to the westward you will see a number of small hills on the shore, until you reach a small lagoon, which is 15 miles from the river, and is too shallow for anything but boats; the banks of this lagoon are well wooded. From the lagoon to Mobile Bay the shore is covered with patches of trees, and is remarkable for appearing with clumps of trees and bare ground alternately.

MOBILE BAY.—On the western side of Mobile Bay the coast is bordered, at the distance of about 6 miles, by a series of long narrow islets, which extend as far as the Delta of the Mississippi; between these islands there are passages of various depths of water, but few of which are suitable for vessels. The first of these islands, named Dauphin Island, is about 5 miles in length and 2 in breadth where widest; the western extremity of it, for 3 or 4 miles eastward, is a narrow tongue of land, with a few withered trees on it; the rest of it is thickly covered with pines, which, at the east part, reach nearly down to the beach.

Dauphin Island forms the west side of Mobile Bay, and has immediately to the northward of it another island, named Gillori; from whence to the shore there is a series of shoals, with small passages between, suitable only for boats. South of Dau-

phin Island, and about a mile distant, lies Big Pelican Island, which is small and arid; and about 3½ miles to the eastward of Pelican Island is Mobile Point.

Between Dauphin Island, Pelican Island, and Mobile Point, there are shoals extending out from each of them, that leave a channel not more than one-third of a mile wide; these shoals extend to the southward about 4 miles, which is the length of the channel; in it there are from 4 to 7 fathoms, except at its beginning, where there is a bar with only 14 or 15 feet.*

The following directions have been given for this port :—"Bring the eastern part of Dauphin Island to bear N.W. by N., and follow on that course until Mobile Point bears N. ½ W., distant scarcely 3 miles: this position is very near to the edge of the bar in 6 or 7 fathoms, and whence, in another cast of the lead, the bar will be passed, and 7 fathoms again obtained. It ought always to be kept in mind, that this bar being very steep, is continually altering when there is a sea on; and, therefore, in blowing weather on the shore, it should not be attempted in ships that draw more than 10 feet water. The first direction of the bar is towards Dauphin Island, in which you ought to steer more than a mile; and having passed the elbow of the east shoals, steer N. by E. ½ E. to Mobile Point, to the north of which you may anchor in 3 or 3½ fathoms, but without shelter, because the bay is very large, and the current within it is rather rapid."

From Mobile Point to the Fort and Town, which are on the northern part of the west coast, the distance is 9 leagues, and the depth diminishes gradually from 3 to 2 fathoms and less water.

Mobile has a bold entrance, and it should not be attempted without a pilot on any account. Even when there is not a fresh breeze, the currents set strongly in various directions.

On Little Pelican or Sand Island, lying on the western side of the entrance to Mobile Bay, there is a fixed light, but it is not seen so far to seaward as the light on Mobile Point. This light stands in lat. 30° 11′ 30″ N., long. 87° 59′ 0″.

The lighthouse on Mobile Point is in lat. 30° 13′ 15″ N., and long. 87° 58′ W. The light, elevated 55 feet above the ocean level, is revolving, and appears once in a minute; thus differing only 10 seconds in its revolution from that at Pensacola. From this cause, conjoined with erroneous longitudes assigned to these ports, vessels have mistaken Mobile for Pensacola, and the reverse, and thus run into great danger.

S. 5° E. from the light on Mobile Point, 5 miles distant, you have 3 fathoms on the bar. The east end of Dauphin Island will then bear N.N.W. ¾ W., and Sand Island (just above water) will be on the middle of Dauphin Island.

The interior of Mobile Bay has water enough for any vessel that can pass over the bar; but on account of a shoal formed opposite the mouth of Dog River, 11 miles south of the town, vessels drawing more than 8 or 9 feet cannot, at low tide, ascend the bay further up.

By following close to the south shore of Dauphin Island, and having Big Pelican Island on the starboard hand, coming from the westward, vessels drawing 7 feet water can enter the bay at low water; but to do this, you must, when the east point of Dauphin Island is north of you, steer to the southward, to avoid a narrow sand-spit which projects off from the point 1¼ mile S.S.E.; haul close round this spit, and steer up the bay.

There is good anchorage between Big Pelican and Dauphin Islands, and close to the latter, for vessels drawing 12 feet; this anchorage can be entered either from the westward, by steering close to Dauphin Island, or from the main channel, leaving it when Big Pelican Island bears W. by N. (about 2 miles S.W. from Mobile Point). During the prevalence of northerly winds, when vessels from sea are prevented from entering the bay, this anchorage affords good shelter.

Those off Mobile should recollect the necessity of getting an offing as soon as there are appearances of a gale on shore, either to weather the *balize*, or which is better, to take in time the Road of Naso, as destruction is inevitable if you come to anchor outside Mobile Bar during the gale.

Strangers approaching Mobile Point in the night, should keep in 10 fathoms water till the light bears North, to avoid the dangerous sands lying to the eastward, and the

* But it is stated that in the course of the survey made in 1850, by Lieutenant Patterson of the United States Navy, a depth of 20¾ feet and more was found, which depth appears likely, from a subsequent examination, to be maintained.

shoals off Pelican and Sand Islands, on which is a beacon, to the westward of the bar.

In running for the land, should you make it to the westward of the bar, it will appear broken, as it consists of small islands, which occasion several openings. More to the westward the land is very level. Dauphin Island, on the western point of the bay, appears high and bluff; Mobile Point, low and sandy, with a single tree on the extremity.

Vessels approaching the entrance to Mobile Bay in the day should not run for the bar until the light on Sand Island ranges between the east and west ends of the woods on Dauphin Island.

Vessels not drawing over 10 or 11 feet, and with easterly winds, may haul in for the bar as soon as the beacon comes on within the west end of the woods, and keep it on thus until they get 7 or 8 fathoms water, when they will gradually haul more northerly; at this time all the dangers will be visible. Heavy ships must bring the beacon on with the centre of the woods, and cross the bar with it thus, in about 18 feet water, steering up N.N.W. until abreast or past the beacon and island on the port side, from which an extensive shoal makes in every direction. Within the bar are or were two buoys, the first to be left on the starboard, and the second on your port hand. The channel up thence is deep and plain. Mobile Point Lighthouse bearing between N. and N.N.E. Tide rises $2\frac{1}{2}$ feet.

Other directions for Mobile say "Bring Sand Island Light to bear N.W., and run direct for it, until one-quarter of a mile of the light; then bring Mobile Point Light to bear N. by E. and run for it, leaving it on your starboard hand about one-eighth of a mile distant; you may then steer N. $\frac{1}{4}$ W. up the bay about 25 miles; you will then obtain a pilot over Dog River Bar, and up to the city.

"In running in for Sand Island Light, you will cross the bar in from $2\frac{1}{2}$ to 3 fathoms water. After crossing the bar, should you have the wind a head, you must not stand further to the westward than into 6 fathoms water, or to the eastward in less than $9\frac{1}{2}$ fathoms."

The city of Mobile is situated at the mouth of the great River of Alabama,* and has become the seat of an extensive trade; about 250,000 bales of cotton are annually shipped from its wharves; and the population, which in 1830 was only 3194, had increased, in 1840, to 12,672.

At a little to the north-eastward of the town the Bay of Mobile terminates in a number of marshes and lagoons. Fort Conde stands near the bay, towards the lower end of the town. At a mile below this, on Choctaw Point, there is a harbour light, which if brought to bear N. by W. $\frac{1}{2}$ W., will lead directly up to Mobile. Large vessels cannot go within 7 miles of the town, in consequence of a great part of the bay being shoal.

It has been observed that above the bay, the River Mobile presents an appearance nearly similar to that of the Mississippi; but the banks of the bay are generally high, and not subject to inundation. Between the localities on the Mississippi and Mobile Rivers, there exists a very strong contrast. From the shortness of its course, the latter is scarcely subject to any of the evils attending an inundated country, when compared with the former. The floods of the Mobile are sudden, and soon subside: they occur at most seasons of the year, but are most abundant in spring. Before the violent heats

* The Mobile, in Alabama, is formed by the junction of the Alabama and the Tombekbee, or Tombigbee, 50 miles above Mobile Bay. A few miles below the junction it gives out a large branch, named the Tensaw, which also receives an arm from the Alabama, and reaches Mobile Bay below Blakely. The Tombigbee is formed by the confluence of two large streams, the Tombekbee from Mississippi, and the Black Warrior from the northern part of Alabama. It admits vessels drawing six feet water to St. Stephen's, 93 miles from the bay, and steam-boats of moderate burden to Tuscaloosa, on the eastern branch, 300 miles, and to Columbus, in Mississippi, on the western branch. The Alabama is formed by the junction of the Coosa and the Talapoosa, both of which have their sources in the western part of Georgia. It is navigable to Claiborne, 100 miles from the bay, by the same class of vessels that go up to St. Stephen's, and by the smaller steam-boats for some miles above the confluence, along both branches. The rivers of Alabama flow in deep beds, and rise in some places during the spring floods 50 or 60 feet above their low-water level. Their utility as navigable channels is much diminished by the excessive winding of their courses; and during six or seven months of the year the navigation is impeded, and for part of that period suspended, by the shoals and bars, which become impassable at low water.

of summer the waters of the Tombigbee and Alabama are abated, and their swamps are, in a great measure, drained.

Immediately to the westward of Dauphin Island, at the distance of about 5 miles, is Petit Bois Island, and a shoal extends nearly all the way between them. This island is about 8 miles in length, and is extremely narrow, but very conspicuous in consequence of a thicket of trees being on its middle part, while there are no other trees on any other part of the island.

At about 2 miles to the westward of Petit Bois Island, but connected thereto by a shallow flat of 6 to 7 feet water is Cuerno or Horn Island, which runs to the westward about 13 miles, and is only one mile broad. There are some trees on this island, but the eastern part of it is composed of barren sand-hills. Within Horn Island, and off the entrance of Pascagoula Bay, is a small islet, named Round Islet, upon which there is a lighthouse showing a fixed light, at 44 feet above the sea, visible 14 miles.

At about 5 miles to the westward of Horn Island is Ship Island, having a small islet between named Perros, or Dog's Islet. Ship island is long and very narrow: its middle, which is the broadest part, is covered with grass and has some pine trees on it, but the rest of it is entirely barren. On the north coast, near the middle of the island, is a well of very good water. From Ship Island a shoal extends to the eastward, which not only surrounds Perros Islet, but advances so far as to leave only a small channel of one-third of a mile in width between it and Horn Island, in which, although there is a depth of $4\frac{1}{2}$ fathoms, there is at its southern entrance a bar of but 14 feet water.

Opposite Ship Island, on the main coast, is the Bay of Biloxi; and about 9 miles to the eastward of it is Pascagoula Bay, into which a large river of the same name discharges its waters. Off this bay is Round Islet, previously mentioned, the shores of which are surrounded by a shoal. From hence the coast runs nearly East, 21 miles, where it bends to the North, and forms the western side of the extensive Bay of Mobile. The last portion of coast is shut in by a chain of islands, which extend from Horn Island eastward; the two largest are named Petit Pois and Dauphin Islands, the others are much smaller. The space between these islands and the coast is about 7 miles in width, but so shallow as to be navigable for small vessels only: the land on the coast is full of lagoons with clay bottoms, but two or three miles in from the beach, it is covered with pines and oaks, and the ground is sandy.

To the westward of Ship Island, about 5 miles, is Cat Island, which is of a triangular shape, and about $4\frac{3}{4}$ miles in extent. On its western extremity there is a lighthouse showing a fixed light at 51 feet above the sea, visible about 12 miles, and there is also another on the main land to the north-westward of this, also showing a fixed light: these two lighthouses indicate the channels through the Mary Ann and Christian Passages. The impeded part of the sound, in the direction of Cat Island, and the entrance of the Bay of St. Lewis, is named Pass Christian, and does not admit of vessels drawing more than eight feet at medium tide. This draught of water can be carried through Lake Borgne.

CAT AND SHIP HARBOURS.—Cat and Ship Islands are situated about 8 miles from the main land, and immediately within them there is excellent anchorage. Between the islands there is an extensive bank of 8 to 10 feet which runs off to the eastward of Cat Island, and limits the navigable channel to about $1\frac{1}{4}$ mile in breadth; which channel is immediately around the west end of Ship Island, and has a depth of $3\frac{1}{2}$ to 4 fathoms, with a few shoal spots of 16 to 17 feet water. over what is termed the bar.

The following instruction for making these harbours are by Lieut.-Com. C. P. Patterson, of the U. S. Navy, who is engaged in the survey of this part of the coast, but they will be of little use without the assistance of the chart, the result of the survey, which has been executed in a very elaborate manner:—

"CAT ISLAND HARBOUR.—*Approach and Courses into the Anchorage.*—With the W. end of Ship Island woods bearing N. by W. $\frac{3}{4}$ W., distant $3\frac{1}{4}$ miles, in $4\frac{1}{4}$ fathoms water, sticky bottom, the course is West (on South Spit as soon as it is in sight) 8 miles, until Great Sand Hill bears N.W. by N. $\frac{3}{4}$ N., with $3\frac{1}{2}$ fathoms water, sticky blue mud; when the course over the bar is S.W. by W. $\frac{1}{2}$ W., $2\frac{7}{8}$ miles, until the water deepens from 16 feet (the least water on the bar) to $3\frac{1}{4}$ fathoms, and South Spit bears N. by W. $\frac{1}{2}$ W.; when the course up the channel is W.N.W., $3\frac{3}{4}$ miles, until Cat Island Lighthouse bears N. by W. Then the course is W. by S. $\frac{3}{4}$ S., half a mile, to the anchorage, in from 4 to $5\frac{1}{2}$ fathoms water, soft sticky bottom.

South Pass for Coasters, &c.—When Cat Island Lighthouse bears N. by W., as above, the course is W.N.W., continued $1\frac{3}{8}$ mile, until the lighthouse bears N.E. $\frac{3}{4}$ N.; when the course is S.W. by W. $\frac{1}{4}$ W., $2\frac{1}{2}$ miles, to the fair-way leading to Lake Borgne.

Spit Cove.—The course is N.E. $\frac{1}{4}$ N. on the S.E. clump of woods.

Dangers.—Phœnix Spit sets off S.E. from South Spit, one mile, with 12 feet water on its outer end, hard sand. The only marks for it are Great Sand Hill just open to the eastward of the woods, and the lighthouse well open to the southward of South Spit.

Squid Hill lies on the S.W. side of the channel, one mile, from the N.E. point of Isle au Pied, in range with S. Spit, and has 5 feet water on it, hard sand.

Potato Hills are several small lumps of hard sand at the head of Cat Island Channel, on the south side, with from 4 to 5 feet water upon them. The bearing for the S.E. Hill is the lighthouse N. by W. $\frac{1}{2}$ W., distant $1\frac{7}{8}$ miles: for the N.W. Hill the lighthouse N. $\frac{1}{2}$ W., $1\frac{1}{2}$ mile.

Fish Tail lies on the south side of the channel, south of the Potato Hills, and forms the east point of Shell Bank Flats, with 6 feet water on its extreme point, hard sand. The tide rip generally shows it.

Pistol Bank is the Middle Ground between Shell Bank Channel and South Pass, and has but 5 feet water on it, hard sand.

"*Remarks.*—Great Sand Hill is the most remarkable land-mark on this coast. It is a white bare sand hill, 60 feet high, on the north point of Cat Island. Cat Island Bar is nearly 2 miles broad, and is composed of soft sticky blue and grey mud. The channels to the westward of Potato Hills are, with the exception of South Pass, narrow and intricate: the marks are so indistinct as to be useless to strangers, being peculiar trees, clumps, &c., on Cat Island and Isle au Pied.

"SHIP ISLAND HARBOUR.—*Approach and Courses into Anchorage, Main Channel.*—With the west end of Ship Island woods bearing N. by W. $\frac{3}{4}$ W., distant $3\frac{1}{4}$ miles, in $4\frac{1}{4}$ fathoms water, sticky bottom, the course is W. $\frac{3}{4}$ N., $3\frac{3}{4}$ miles, until the west end of Ship Island bears N. by W. $\frac{1}{2}$ W., and the small sand hill on the neck, named Table Hill, is open to the northward of N.W. Bluff, when the course is W.N.W. on Great Sand Hill of Cat Island, $1\frac{1}{2}$ mile, until the west end of Ship Island bears N.E. $\frac{3}{4}$ N. Then the course over the bar is in that bearing, west end of Ship Island N.E. $\frac{3}{4}$ N., two-thirds of a mile, until in 5 fathoms water; when the course is N. $\frac{3}{4}$ W., half a mile, until westend of Ship Island, bears E. $\frac{3}{4}$ N.; then the course is N.E. $\frac{3}{4}$ N., half to one mile, to the anchorage, in from $3\frac{1}{2}$ to $4\frac{1}{2}$ fathoms water, sticky bottom. *South Channel.*—When the west end of Ship Island bears N. by W. $\frac{1}{2}$ W., the course is that bearing until in $4\frac{1}{4}$ fathoms water; then the course is W.N.W. until the west end of Ship Island bears N.E. $\frac{3}{4}$ N., when the courses are as above. *East Channel.*—The course is W.N.W. on the west end of Ship Island until Table Hill is on with the middle of Ship Island woods, and the east sand hills of West Head bear N.N.E.; when the course is W. $\frac{1}{4}$ S., until the west end of Ship Island bears N.E. $\frac{3}{4}$ N.; then the courses are as above. *North West Channel.*—The west end of Ship Island bearing E. $\frac{3}{4}$ N., the course is N. $\frac{3}{4}$ W., 1 mile, until the west end bears S.E. by S.; when the course is N.W. by N., $2\frac{1}{8}$ miles, until Cat Island Lighthouse ranges over North Point; when the course is W. $\frac{3}{4}$ N., $2\frac{1}{8}$ miles, to the anchorage, in from 17 to 18 feet water, very soft blue mud. *Ship Island Channel.*—To enter from the westward, the course is E. in range between Great Sand Hill and west end of Ship Island woods, until Table Hill bears S.E. $\frac{1}{2}$ S., when the course is N.E. by E. $\frac{3}{4}$ E. for the mouth of the Lagoon, until the west end of the woods bears S.E. $\frac{1}{4}$ S.; then the course is N.E. by N. $\frac{1}{2}$ N. The edge of Ship Island Flats nearly always shows plainly.

"*Ranges.*—In working over the bar, the west end of Ship Island on with N.W. Bluff clears the S.E. Spit to eastward, and the east sand hills of West Head, just open to the northward of N.W. Bluff clears the knoll to the westward. Table Hill on N.W. Bluff clears the Middle Ground to the southward and eastward.

"*Remarks.*—The east end of Ship Island is covered with high pine woods scattering at each end with a break in the centre. The West Head of the Island is composed of low scattered sand hills covered generally with beach grass. The neck connecting the two ends of the island is a narrow sand strip, 3 or 4 feet above low water, with a small sand hill near its centre named Table Hill. During heavy S.E. weather this neck is covered with water giving the appearance of two islands.

"TIDES.—The rise and fall of the tide at Cat and Ship Islands is usually small; the

time and height of high and low water are irregular, and much influenced by the direction and force of the wind. The average rise and fall (from observations made hourly during the day and night in 1848, near Cat Island Lighthouse) was one foot.

"The average variation in the time of one high or low water from the mean time, deduced from the observations for each month, was $3\frac{1}{2}$ hours, but the extreme variation was $6\frac{1}{2}$ hours. The highest tide observed was 2.74 feet above mean low water, the plane of reference, on the 16th June, during a violent S. E. gale.

"The lowest tide observed was 2.09 feet below the same plane of reference, on the 15th March, during a severe gale from W.S.W.

"On the average there is one high and one low water during every twenty-four hours; the high water occurring at the time given in the Table below, and the low water twelve hours afterwards.

Jan. at $8\frac{1}{3}$h. p. m.	May at 11h. a. m.	Sept. at $3\frac{1}{3}$h. a. m.
Feb. at 6h. „	June at $10\frac{1}{3}$h. „	Oct. at $0\frac{1}{3}$h „
March at 2h. „	July at 10h. „	Nov. at $11\frac{1}{3}$h. p. m.
April at 1h. „	Aug. at 8h. „	Dec. at 11h. „

"WINDS.—Winds from N.E. round by E. and S. to S.W. tend to raise the water in Cat Island Harbour, and those from S.W. round by W. and N. to N.E. tend to depress it. The prevailing winds are easterly. The relative duration of wind from an easterly point to that from a westerly one (during the period of an entire year) is 2 to 1, the average force being the same. During Dec., Jan., and Feb., N.E., E. and S.E. winds prevail; with an excess of S.E. in March and April, and of N.E. (trade wind) in Sept., Oct., and Nov. During May, June, and July, S.E., S. and S.W. winds prevail, with an excess of S.W. (the sea breeze). In August N.E., East, S.E., and S.W. winds prevail.

Lat. of N.W.Bluff on Ship Island 30° 14′ 35″ N., long. of do. do. 88° 48′ 45″ W., or in time 5h. 55m. 15s. Variation of the Magnetic Needle at East Pascagoula, June, 1847, 7° 12′ 57″ E."

To the westward of Cat Island, about 20 miles, are Lakes Borgne and Pontchartrain, in the entrance to which there is very little water. At the entrance of these waters there are several low islets, and the navigation of the lakes is materially assisted by the establishment of several lighthouses and beacons on the shores and on the islets scattered about. By means of these lakes a more ready communication with the city of New Orleans is kept up than by going through the passes of the Mississippi, and many steamers and coasting-vessels are engaged in the trade. To run into either of these lakes, none but those well acquainted with the navigation should attempt the channel without a pilot.

CHANDELEURS.—To the southward of Ship and Cat Islands, and bordering the coast to the Delta of the Mississippi, is a chain of low islands, named the Chandeleurs, which run S. by W., about 23 miles, and together with Grand Crosier and Cayo Breton, about 15 miles farther to the south-westward, form with the coast a large gulf, shut in nearly on all sides, and which may be entered either between the coast and Cayo Breton, or to the north of the Chandeleurs The regular depths in this gulf are 8 and 10 feet, therefore only very small vessels can navigate it.

All these islands are very low, with some small brushwood on them: they form a dangerous cordon of coast, because they can be seen only at a short distance, and also because in winter, when the S.E. winds blow with great violence, they present a perilous lee-shore. There is, however, good shelter for vessels of every description, on the west side of the north extremity of the Chandeleurs. This anchorage is called the Road of Naso, and is the only safe retreat for large vessels in all this part of the coast of West Florida; not only because it is sheltered from the on-shore winds, but also because it has no bar, breakers, or any other obstacle, to impede the free entrance to it at all times and in all weathers. To enter, you have only to round the north point of the islands in 5 or $5\frac{1}{2}$ fathoms water, which will be about a mile from the land, and steer afterwards to the West and South, without getting into less than 4, 5, or $5\frac{1}{2}$ fathoms water, according to the ship's draught. You may anchor when the north point of the island bears N. by E. $\frac{1}{2}$ E., or nearly so, at the distance of 2 miles, in $3\frac{3}{4}$ or 4 fathoms water; but if deeper water be required, it will be necessary not to run so far to the southward, but to anchor so soon as the point bears about N.E. by E. $\frac{1}{2}$ E., where you will have $4\frac{1}{2}$ or 5 fathoms. On the Chandeleur Islands water may be obtained with facility, by digging wells or cisterns on any part of them, but no other wood than drift wood is to be had here, which the beach furnishes in tolerable abundance. The

soil itself produces only a species of myrtle, from which a green wax is extracted, whence the name Candelarias or Chandeleurs (Candlemas Islands), is derived.

On the north end of the north Chandeleur Island there is a fixed light, visible about 14 miles, which is of great service to the coasters frequenting the Lakes Borgne and Pontchartrain.

RIVER MISSISSIPPI.—This river has its sources in the brooks which form the small Lake Itaska, or La Biche, about 47° 10′ N. lat., on a high table-land about 1500 feet above the level of the sea, and 3200 miles from the mouth of the river, following the windings of the stream, but only 1250 in a straight line. Rising in a region of swamps and wild rice lakes, it flows at first through low prairies, and then in a broken course through forests of elm, maple, birch, oak, and ash, till at the falls of St. Anthony, 1100 miles from its source, it tumbles over a limestone ridge, with a fall of 17 feet. The river is here 600 yards wide. Below this point it is bounded by limestone bluffs from 100 to 400 feet high, and first begins to exhibit islands, drift wood, and sand bars. Its current is slightly broken by the Rock River and Desmoines Rapids, which, however, present no considerable obstacle to navigation; and 850 miles below the Falls of St. Anthony it receives from the west the great stream of the Missouri. Above the junction, the Mississippi is a clear, placid stream, a mile and a half wide; below, it is turbid, and becomes narrower, deeper, and more rapid. Between the mouth of the Missouri and the sea, a distance of 1220 miles, it receives its principle tributaries:—The Ohio from the east, and the Arkansas and Red River from the west; and, immediately below the mouth of the latter, it gives off, in times of flood, a portion of its surplus waters by the outlet of the Atchafalaya. It is in this lower part of its course that the river often tears away the islands and projecting points, and, in the season of high water, plunges huge masses of the banks with all their trees into its current. In many places it deposits immense heaps of drift wood on its mud bars, which become as dangerous to the navigator as rocks and shoals at sea. Below the Atchafalaya it discharges a portion of its waters by the Lafourche, and the Iberville; but the greater part of its contents flows on in the main channel, which passes through a flat tract, by New Orleans, and reaches the Gulf of Mexico at the end of a long projecting tongue of mud, formed by the deposits of the current. Near the sea it divides into several channels, here named passes, with bars at their mouths, on which are from 12 to 16 feet water. The water is white and turbid, and tinges the sea to the distance of several leagues. The river begins to rise in the end of February or the early part of March, and continues to increase irregularly till the middle of June, generally overflowing its banks to a considerable extent. Before the introduction of steam-vessels, the river was navigated by keel-boats, which, in going upward, were rowed along the eddies of the stream, or drawn by ropes along the shore; and by this tedious process more than three months were consumed in ascending from New Orleans to the Falls of the Ohio, a passage which is now made in ten or twelve days. The first steam-boat was introduced in 1810; there are now upwards of 500 on the river.

The following instructions have been drawn up from various sources; from the observations and remarks of Mr. W. A. Somers, branch-pilot, in 1818; those of the late Mr. S. B. Davis, Harbour-master of the port of New Orleans, and others. It is proper to observe that in consequence of the rapid increase of the Delta, no directions for ascending the river should be depended on for any length of time, hence a pilot is always requisite:—

Should you take your departure from the Tortugas, endeavour to make a N.W. course good, and by so doing you will fall into the latitude of the Balize, 20 leagues to the eastward of it; continue on the same course to the latitude of 29° 20′; you may then steer West, or W. ½ S., until you get into the depth of 25 fathoms, whence you should haul to the S.W. for the Balize, taking care not to pass its latitude in the night time, and you may be sure of seeing Frank's Island Light. If the weather be thick, keep in 16 fathoms, and you will fall in off the Pass a l' Outre, where pilots are always stationed; but should you see the land, or vessels at anchor, if the wind will permit, haul to S.S.W. or more southerly, and run along in 12 fathoms, until you bring the Block House to bear W. by N. or W.N.W., when you may anchor in 10 or 8 fathoms, about one mile, N.N.E., from the entrance of the S.E. Pass, and by this time you will have a pilot.

Navigators cannot be too cautious when approaching the Chandeleur Islands; not that there is any danger, if they be careful in sounding, but the depth of water diminishes quickly, from 30 fathoms to 15, 10, and 6. From the depth last-mentioned, the

land can scarcely be seen from the top-gallant mast head of a ship of 300 tons, in fine weather.

Commanders unacquainted with the coast are frequently alarmed when they come near the river by the appearance of the water, particularly during the first summer months, when the river is high; for, at that time the fresh water rushes out with great force, and being lighter than the ocean water, floats on the top, making an appearance altogether singular and alarming; for, where the fresh water does not entirely cover the salt water, but leaves spots, it has the appearance of rocks, the river water being of a milky colour, while the other is quite dark, and changes suddenly. When the river is low, the white muddy water extends about 3 leagues off; and when high, about 5. On getting into it, it ripples like shoal breakers, but the soundings are regular.

The current sets with little variation to the east; and when any variation is experienced, it is either to the north or south of the river's mouth. It is very evident to every reflecting mind, that so large a column of water rushing into the ocean must spread when it is no longer confined and produce different currents, until it has found its level; and will be found to vary from the original course, in proportion as you approach the edges. Allowing the current to set due East, two ships have been known to come into the river at the same time, and the one complain of a southerly, and the other of a northerly current, and that because one had been to the south, and the other to the north of the river's mouth; however, as every stranger should get into the proper latitude, before he comes within the influence of its current, it is not necessary to add anything more on the subject.

The land at the entrance of the River Mississippi is composed of mud banks,* continually increasing, with reeds and rushes growing upon it, to the height of 10 or 12 feet above the water. The lighthouse on Frank's Island, in the N.E. Pass, or vessel's at anchor, are generally the first objects you discover. The general winds are from the N.E.; and you should avoid getting to the southward. The winds make a difference in the depths of water on the bar at the entrance of the Mississippi, and the general depth is from 11½ to 14 feet.

Lighthouses.—The lighthouse on Frank's Island is situated in lat. 29° 8′ 30″ N., long. 89° 1′ 24″ W. It contains a fixed light, elevated 78 feet above the ordinary surface of the sea, and can be seen, in clear weather, 6 leagues distant. Your best course running for the light is due W., and vessels may safety anchor in 10 fathoms water.

The lighthouse at the S. Pass is in lat. 28° 59′ 42″ N., long. 89° 7′ 24″ W., and it stands on a shoal or island, near the south point of the Pass. It shows two fixed lights, which are left on the port hand going into the river. The structure is painted black and white, in horizontal stripes.

The lighthouse at the S.W. Pass is in lat. 28° 58′ 30″, and long. 89° 20′ 0″. It is on an island on the south side of the Nine-Feet Channel, about three miles within the bar, and to be left to port on entering the river. The lighthouse is painted black and white in perpendicular stripes, and is about 60 feet high. It shows a fixed light, but, besides this, there are two lower lights, which form a triangle with the upper light when off the bar, and in a position to cross it.†

THE PASSES.—The principal entrances to the Mississippi are the N.E. Pass, shown by the light on Frank's Island, and the S.E. Pass, about 4 or 5 miles south of the light. To the N.W. of these is the Pass a l' Outre, the entrance of which is two leagues N.N.W. from the light on Frank's Island. The South Pass is also shown by two fixed lights. The next is the S.W. Pass, indicated by triangular lights.

The following bearings from Frank's Island lighthouse are the mean of a number of experiments by compass:—

Pass a l'Outre N.N.W., distant two leagues; S.E. Pass S.S.W., one-and-a-half

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* These mud banks originate from the great number of trees continually floating down the river, and grounding at its entrance into the sea. At the distance of above 4 leagues, in clear weather, these banks are not discernible from the mast-head; they are about 10 or 12 feet above the water, and are covered with reeds and rushes.

† These lights may not be strictly accurate, and we cannot but regret that the information we possess of the lights and beacons on the coast of the United States is very scanty. We have found it difficult to obtain a knowledge of even the most important changes, in consequence of public notice not being given.

league. S.W. Pass S.W., distant 22 miles, but from it the light cannot be seen, on account of the cyprus growth lining the sides of the pass itself, as well as the intermediate mud-banks, which are generally covered with bushes.

S. E. or Balize Pass.—Vessels approaching the Balize, should keep two or three leagues to the northward, by which you will have good soundings to guide you. When you have struck soundings, you may run in the parallel of the Balize into 18, or even 16 fathoms; and you will then see the lighthouse on Frank's Island, and have the Block House, or Balize, bearing south-westerly: the anchorage is good everywhere. Should it become calm, a light kedge will prevent being drifted by the current, which is sometimes pretty strong on the coast, but it is much stronger in the latitude of the river's mouth than elsewhere, and there are no soundings until you are close in with the land.

In running from Pass a l'Outre for the main bar at the S.E. Pass, in the night, it is not safe to keep in less than 15 fathoms water; in the day time vessels may approach within 8 or 10 fathoms, observing to keep the lead going. Being off Pass a l'Outre in 15 fathoms, in order to go round the N.E. Pass in 10 fathoms, the course is S.S.E., distant two leagues; from thence to the anchorage off the bar, S.S.W., $1\frac{1}{2}$ league. The Block House at the Balize bears from the best anchorage to wait for a fair wind to come over the bar, W. by N. $\frac{1}{2}$ N., distant 2 leagues, where will be found 8 to 11 fathoms. At the entrance of the S.E. channel on the bar, the Block House bears N.W. by W., distant 5 miles.

On approaching the river, should it be very foggy, as it sometimes is in summer and fall, either anchor in 12 or 15 fathoms water; or stretch to the northward, as the currents to the southward of the bar set strongly along the land to the southward, and by keeping to the southward you will be liable to be driven to the southward of the south point, in the latitude of which you will have 35 fathoms, within three miles of the land. A large bell has been provided, which will be kept tolling by night and by day, whenever from fog, or any other cause, the light or lighthouse on Frank's Island cannot be seen at least four miles, at which distance it is calculated the bell may be heard in moderate weather.

S. W. Pass.—In coming from the sea, the S.W. Pass is said to have advantages, there being but few shoals. The water is very deep close to the bar, and the softness of the mud is such as to do little harm to a vessel, even should she ground. Vessels, after making the light, are often blown to the southward of the Balize, where they have been known to be embayed for days and weeks together. Ships drawing 16 feet have been taken over this bar without touching, whereas ships drawing $14\frac{1}{2}$ feet water often lie on the S.E. bar for days. The N.E. and S.E. Passes are subject to changes, although much frequented by vessels of the largest class. From the S.W. Pass, 22 miles distant, the light on Frank's Island cannot be seen. By using this Pass, the delays mentioned may, in a great measure, be avoided.

In latitude 29° 18′ N. you will strike soundings in 45 or 50 fathoms, on small grey sand with black specks; the Balize bearing W.S.W. $\frac{1}{2}$ W., distant 40 miles. When in 15 or 18 fathoms, on soft sticky mud, you may, if the weather be clear, see the Balize bearing about S.W. With the Balize bearing about S.W. run not into less depth than 12 fathoms, on account of some small mud-banks, scarcely discernible above the surface, until the Balize bears W.N.W. and N.N.W., in 10 fathoms. With the Balize bearing N.W., the ground is good to anchor on, and advantageous for getting under way to go over the bar. In foggy weather, approach the land no nearer than the depth of 15 fathoms; and if the wind be light, it is advisable to anchor, in preference to being drifted about by the currents.

Having obtained sight of the Balize, bring it to bear W.N.W. and run for it, and that will bring you up to the bar. If you see no pilot, you may safely run, with your anchors ready to let go, into 9 fathoms water; and though it should blow hard from the S.E. you will ride without much strain on your cables.

In sailing up the river, if you have a fair wind, run from point to point, carefully avoiding the bends; and by doing so you will shorten the distance, have less current, and what is of more consequence, you will avoid the danger of having your vessel stove, and perhaps sunk, by the trees which are frequently met with under water. As you are coming up to, and passing a point, it will be well to have a cast of the lead. With light winds, or when the wind is scant, always keep on the lee side of the river. Every vessel, while in the river, should have its boat alongside with a good hawser in it, according to the size of the ship, ready to run out to a tree which method of bringing

up is always preferable to letting go an anchor, for you are sooner under way, and avoid the danger of losing your anchor.

Every vessel, while in the river, should have a haul-about block lashed under the bowsprit, to reeve a rope through, which rope should be bent to the crown of the anchor, in the same way as a buoy-rope, and be strong enough to weigh it; the crown line should be of length sufficient, that, when the anchor is let go, you may veer it away with the cable, and always have the end on board; as by this means, if your anchor should get foul of anything (which frequently happens), you will get it again; otherwise you will be obliged to cut your cable, and lose your anchor.

If you are obliged to anchor, let it, if possible, be at a point, for you will be more likely to find clear bottom. In the bends, the bottom is always foul, being full of sunken trees; and there are few instances where an anchor need be let go in the bends, because you may always make fast to a tree.

At the distance of about three miles above the Balize, or Block House, and opposite Pass a l'Outre, there is, or was, a flat which extends full half-way across the river, named the Middle Ground: great part of which is said to be dry. This Middle Ground may be named the first shoal, and is to be avoided by keeping near the Pass, into which you must take care not to be drifted. The next shoal lies about seven miles above the fort at Plaquemine, on the port side of the river, as you are going up; and must be avoided by keeping nearer to the marsh on the starboard side: this marsh is the first land without trees, that you meet with after leaving Plaquemine. Here the land is very narrow, and by going a few steps up the shrouds, you may see the sea at not more than a musket-shot distance; by these marks, you may know when you are getting near to the shoal. The shoal lies opposite the marsh, and extends full one-third of the way over; these are the only shoals that may be deemed dangerous, but, as before observed, the lead should be cast whenever you are approaching a point.

NEW ORLEANS.—New Orleans, the capital of Louisiana, is situated on the left bank of the Mississippi, 100 miles from its mouth, but only 15 miles from the bay named Lake Borgne, and about four from Lake Pontchartrain. Steam-boats and coasting vessels come up to the landing-place on the latter, where an artificial harbour has been formed, and from which a railroad and two canals extend to the city. In front of the city, on the river, the largest merchant ships lie close along the shore, and discharge and receive their cargoes by means of a moveable platform adapted for the purpose. The river is about 160 feet deep, and about half a mile wide. The city is is built on a flat of stone and marshy ground, declining from the river to the swamps in the rear, which, spreading all around, emit noxious exhalations during the hot season, and render the place a dangerous residence to strangers. The older part of the city consists of narrow streets, with old-fashioned French and Spanish houses, most of them only one story high, and built of wood; but in the newer quarters tall brick-houses, in the American style, are most common. The population in 1836 amounted to about 70,000, who display the greatest variety in manners, language, and complexion. French and Spanish Creoles are mingled with immigrants from all parts of the Union, from various countries of Europe, and with coloured persons of every shade. But the police is efficient and vigorous, and disturbances or acts of violence are rare. New Orleans is the emporium of the whole valley of the Mississippi. Thousands of huge arks and rafts float down the mighty stream for thousands of miles, loaded with the produce of the country. From 1500 to 2000 flat boats, from 50 to 60 steamers, and a forest of masts of sea-going vessels, are often to be seen at once along the levee, which protects the city from the river. The whole value of the commercial transactions during the year probably exceeds £16,000,000 sterling. The banks of the river, for 50 miles below the city, are covered with sugar plantations; and a little lower down, at Plaquemine bend, the approach is defended by Forts Jackson and St. Philip. Below these there are no settlements, except at the little hamlet of Balize, 4 miles within the bar, occupied by a few pilots. The state of Louisiana contains no other important towns; but it possesses a great number of thriving villages, among which we may mention Alexandria, on the Red River, and Natchitoches, on the same river, 90 miles above it, and 190 from the Mississippi, with a population of 2,500.*

* In Lake Pontchartrain there is a lighthouse, with a small fixed light, 48 feet above the ordinary surface of the lake, at the Bayou of St. John, 5 miles north from the city of New Orleans.

Vessels going down the river should always have sufficient sail on them to enable them to keep clear of the shore; for without great care you will be driven into the bends, and lose your rudder; and this has frequently happened with experienced seamen. We would observe also, that every vessel, except the wind be fair and weather settled, should bring-to at sunset.

In sailing along, a slight inflection to the right takes you to the head of the Pass, which runs S.W. almost as straight as an arrow. The shores on each side are very bold, there being in many places 7 fathoms water, almost touching the bank. A vessel can often proceed this way, when it would be dangerous, or impracticable, to drop down the bend at the most frequented channel, past the Middle Ground.

About the same distance has to be gone over in order to reach the bar at the N.E., or Old Ship Channel (via the Balize), as to go down the South-West Pass; but the course to the latter is direct, and there is no such dangerous shoal as the Middle Ground in going to it. The latter has 4 or 5 feet more water than the other, and the bottom is soft mud; whereas that of the N.E. Pass is rather hard and gravelly, in many places. During flood-tide there are never less than 20 feet water in the South-West Pass, and about 18 feet at low water.*

After leaving the river, should you be bound to the Straits of Florida, avoid sailing too fast to the southward, or you will meet with the trade wind too soon, which will lengthen your passage. Should the wind permit, steer E.S.E., which course will carry you soon enough into the trade-wind. If you can obtain soundings to the northward of the Tortugas, so much the better; but you should come no nearer in than in 50 fathoms, and should then steer South; and, if you should find the water shoaler in this course, you should keep a little to the westward until you find it deeper. On leaving the Tortugas, a sufficient allowance should be made for the current; and the safest way thence will be to beat up off the shore of Cuba.

Mr. Gauld, in some general directions for sailing from Pensacola to the Balize, says:—"It is best to steer so that you may fall into the northward of the Balize, and never stand into less than 12 fathoms in the night-time. The soundings immediately off the Balize are very deep, there being 20 and 30 fathoms within a few miles of the shore, soft muddy bottom. The land off the Balize has no trees upon it; nothing but reeds and mud-banks are to be seen for some miles before you come to the mouth of the river. Whenever you lose sight of the trees, you are sure to be very near the entrance of the river. Sometimes the masts of vessels, lying in the river, are seen over the land.

Between the Island of Grand Crosier and the Isle au Breton (to the S.W.) there is good anchoring in from 3½ to 4 fathoms, where you may be sheltered from easterly winds, to which the entrance of the Mississippi is much exposed. If you should find occasion to go there, you may range along the Island of Grand Crosier, in 3 or 4 fathoms, about 2 or 3 miles off shore, where the soundings are regular; and you will observe a spit of breakers running from the S.W. point, about two miles in length. Keep pretty close to the western extremity of that spit, where there are 5 and 7 fathoms; luff up round to the north-eastward till you get under the shelter of the island, and come to an anchor. It is very convenient and necessary for those who frequent the Mississippi to be well acquainted with this place."

From the Pass a l'Outre, or Otter Pass, the coast of the Delta takes a westerly direction, and turns northward to the parallel of 29° 27′ N., in which will be found Cayo Breton, which consists of a group of islands, the western extremity of which is 5 miles distant from the coast, which, to the southward, forms a great bay, named La

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It is seen in a clear night about eight miles off. There is also a light on Pleasanton's Island, another at the mouth of the Chefuncta River, on the north side; another at Port Pontchartrain; another at Pass Manchac, and another at the New Canal.

It has been said that the depth of Lake Pontchartrain decreases annually, so that it may, in the course of time, become a marsh, as well as the Lakes Maurepas and Borgne, to the westward and eastward of it. The Lake Maurepas communicates with the Mississippi by the River Iberville, which is quite dry in summer, its bed being above 12 feet above the lowest level of the Mississippi; but in spring, when the river rises, it discharges a part of its waters by the Iberville into Lake Pontchartrain.

* It may be neccessary to observe that the S.E. Pass is the Main Ship Channel, and the N.E. Pass is the Old Ship Channel, both communicating with the east branch of the river: we notice this to prevent the latter being confounded with Pass a l'Outre, which by some is named the N.E. Pass.

Poza, in which there are from 4 to 5½ fathoms, and some shoals with less water, as may be seen by the chart. To the eastward of Cayo Breton, and at the distance of four miles, lies the Island of Grand Crosier, from which a large ridge or ledge runs off about N.N.E., for the distance of 11 miles, to the Isle of Palos or Log Island, the southernmost of the Chandeleurs.

GENERAL DIRECTIONS FOR SAILING TOWARDS THE MISSISSIPPI, MOBILE, AND PENSACOLA.

All the coast from the Mississippi to Cape St. Blas is bordered by a bank of soundings, the edge of which extends to 28° 50′ of latitude, but the depth is very unequal, as may be seen by a glance at the chart. Notwithstanding this inequality, it is very clean, for if the shoals off Cape St. Blas be excepted, there is no danger but what may be avoided by attention to the lead; but, as all the land is very low, without visible marks to distinguish it by, along its whole extent, and as it is frequently obscured by showers and fogs, and the coast much exposed to the winds of the S.E. and S.W. quarters, which, during the winter, blow with great violence, and for a long continuance, and also to violent hurricanes in August and September, it becomes necessary to say something respecting the method of making it, and of navigating upon it.

On this coast there are three points, to which ships in general are bound; namely, the Balize Pass of the Mississippi, Mobile, and Pensacola; for the Bays of Santa Rosa, St. Andrew and St. Joseph have but little commerce. In proceeding to any of these ports from points to the S.E. of them, it will be proper to make the land well to the eastward of their respective meridians, so as to gain the port by steering westward with the easterly winds, which are the most prevalent; but if the approach be made from the west, there is no other resource than working to windward from the point where the land-fall is made, at a greater or less distance from the shore, as may be suitable to the season of the year, the size and qualities of the vessel, &c.

In making the land to the eastward of the port of destination, it should be at a greater or less distance, according to the degree of confidence or certainty that may be placed in the correctness of the ship's place; and thus, it may be sufficient to strike soundings on the meridian of Mobile, if the ship be bound to the Balize, in order to obtain your exact situation; or to strike them on the meridian of Cape St. Blas, when bound to Mobile or Pensacola.

Having struck soundings about 29° latitude, you must steer to the West, if the destination be the Balize, so as to make the land to the eastward of it, or a little more to to the North, that you may not be thrown out of the parallel of it in case of the wind blowing from that quarter; so that in the spring, from April to June inclusive, you may run westward on the parallel of the Balize; but in winter it will be requisite to steer a course that will fetch in about the middle of the Chandeleur Islands. In this route there is no regularity in the soundings; for, in whatever parallel the course may be made, you will as soon get more water as fall into less; nevertheless, from 20 fathoms into less depth, there is much regularity; and from the meridian of Pensacola westward, as far as the southern limits of the Chandeleurs, there are 10 fathoms at 10 miles from the coast; and from that depth the land may be seen. From Pensacola eastward, 10 fathoms are found at 4 miles from the coast.

But, in navigating towards the Balize, it may sometimes be impossible to get an observation for the latitude, and fogs or cloudy weather prevent you from recognising the land: under such circumstances, or in nearing the land after dark, the soundings will be a sure guide to direct yourself by. For this you must keep in mind—that if, in sailing to the west, you get from 40 to 50 fathoms, loose sticky mud, sometimes mixed with a little black or white sand, it will be a certain indication of your being in the parallel of the Balize, and from that depth into less water the same quality of soundings will be found; but if from 40 or 50 fathoms into less water, the bottom be small sand, with very little clay, or without it, the situation will then be between the Balize and Cayo Breton; if small white sand, you will be in the parallel of that cay; if coarse sand, with small shells, you will be between the said cay and the Chandeleurs; and,

if coarse sand, with gravel, small stones, and large shells, you will then be in front of these islands. From the Balize, towards the west, the bottom is in general sand only; this, for such as are steering for the Balize from the southward, if, having steered N.W. and N., after having sounded in 40 or 50 fathoms on sand, and diminishing the depth, the quality of the bottom does not vary until they get in 12 or 10 fathoms, is an indication of being to the westward of the Balize; but if in this route they have passed over clay, and on reaching 10 or 12 fathoms they find sand again, it is a proof of having crossed the mouth of the Balize, and are approaching Cayo Breton and the Chandeleurs.

When bound to the Balize, whether upon its parallel or that of the Chandeleurs, it is advisable not to entangle yourself with the land by night, unless under circumstances of great confidence in the correctness of your situation; but rather come to an anchor, or keep in the depth of 15 or 20 fathoms, until daylight. But if the object be to accelerate the passage, and avoid the delays that an out-shore wind might occasion, it will be advisable to proceed direct for the Balize, and to anchor outside of the bar in 8 or 10 fathoms, as before directed, remembering to fire some guns as you run in, until they are answered from the shore; so that by marking the flash or report of those fired from the Balize, you may thereby be more certain of taking the right anchorage.* But if you have fallen in near the Chandeleurs, on reaching 10 fathoms, steer S. by W. $\frac{1}{2}$ W. for the Balize, endeavouring to preserve that depth, by which you will incur no danger either of getting ashore or among the shoals: in this route the soundings afford a good criterion for ascertaining the vessel's situation; for so soon as you have reached the south end of the Chandeleurs, that is abreast of the Grand Crosier, you will begin to augment the depth to 12, 14, and even 18 fathoms, which latter will be when crossing the Bay of Poza; this augmentation of the depth ceases so soon as you are off the Otter Pass, where you will only have 8 or 10 fathoms. The knowledge of this is of importance for making the Balize with certainty, and avoiding the risk of getting to the southward of it.

If, in this anchorage, a strong S.E. wind should come on, so that it will not allow you to enter over the bar, the best way will be to get under sail in time, and stand in to the southward clear of all the passes; for remaining at anchor in the expectation of being able to ride out the gale, would be attended with the greatest danger of losing not only the anchor you have down, but as many more as might be let go; and there would be the additional risk of not being able to clear the land of the passes, and of going on shore, and being wrecked on it; but when you are under sail and clear of the land, so as to be able to heave-to for the gale, so soon as there is an indication of the wind shifting into the S.W. quarter, it will be necessary to stand inshore again; for if you do not, a strong North wind would carry the ship much to leeward, and there would be great difficulty experienced in getting with it upon the coast again.

Should such a wind come on in the passage from the Chandeleurs to the Balize, no time should be lost in getting a good offing, which will be effected when you are round the Balize; and this will be when you are to the southward of 29° of latitude; for then, when the off-shore tack is not favourable, the other will be so by gaining ground to the eastward; and in the intermediate time the wind may shift into the N.W. quarter, when there will be no more danger of being driven upon the coast.

During these operations care must be taken not to shoal the water under 10 fathoms, when you are on the board either to the S.E. or S.W. quarters; for, from that depth into less, it will not be possible to round the Balize, and if you get into a less depth, and the wind continues, or blows stronger, shipwreck will be unavoidable; for there would be no means of getting to the northward, to take shelter in the anchorage of Naso on the west side of the north extremity of the Chandeleurs.

Being in 10 fathoms, and without any appearance of the gale ceasing, and seeing that you are getting into a less depth, there is the resource of standing to the northward, sounding continually to keep in 8 or 10 fathoms; and thus you may coast along the Chandeleurs: the indication of having passed the northernmost of them will be, by losing the muddy bottom, with sometimes white shells, which is opposite the Chandeleurs, and getting fine white and black sand: you may then steer to the westward, in 10, 8, and 6 fathoms, to anchor under shelter of these islands, in the situation already described. As the thickness of the atmosphere in such weather will

* The lighthouse, which has been erected since these directions were composed, will obviate all difficulty in making out the bar, if the weather be clear.

not permit anything to be seen, you have no other guide to this anchorage than the lead; but, if you can see the land, it may be more easily accomplished, for then nothing more is required than to round the head of the sand-ridge which runs N.E. from the northernmost Chandeleur, on which the sea breaks with great noise.

This opportune resource, which chiefly concerns vessels of small burthen, should be made available as soon as there appears to be any difficulty in weathering the Balize, in order to avoid the accidents that frequently occur in carrying a press of sail with a strong wind and a heavy sea; leaving the experiment to those, to whom, from the great draught of water, it may be a matter of necessity. But even those may, and, in fact, ought, in case of having shoaled into 10 fathoms, with a probability of not being able to weather the Balize, to pursue the above-stated route; taking care to anchor in Naso Road, in a sufficient depth not only for the draught of the vessel, but that she may not touch the ground in the hollows of the sea; and taking every other preventive care that prudence can suggest, in the expectation that, if the anchors fix themselves well in the hard clay that is in the anchorage, and the force of the sea being broken by the ledge running off from the Chandeleurs, it may not be difficult to save the ship from being wrecked, so long as the cables hold. Another important caution must be observed, which is, that as soon as the wind veers to the N.W. quarter, you should weigh anchor without loss of time, and get out; because in that place the water rises with the winds both of the S.E. and S.W. quarters, but falls 2 or 3 feet with those from the N.W. and N.E. quarters.

If Pensacola or Mobile be the port of destination, efforts should be made to make the land to the eastward of them; not only to avoid passing them, but also because there are very few distinguishing marks on the coast, that, to a person who has never visited it before, the almost only guide can be by running along it. Nevertheless, the soundings will show, within a trifle, more or less, the meridian the ship may be in, if the following precaution be attended to; that is, if the lead brings up coarse sand and coral out of sight of land, it is a certain indication of being off the east end of the Island of St. Rosa, as that quality of soundings is found only in that part; and, although they also have it off the River Tampa, and other parts of East Florida, this cannot cause the least mistake, because these points are too remote. From the meridian of the Bay of Santa Rosa to the westward, the lead brings up only fine sand, with dark-coloured grains like gunpowder, and red particles; and diminishing the depth from 18 fathoms, you will enter on very fine rose-coloured sand, mixed with small white shells, and little black stones; which quality of bottom is very remarkable, as it is found only to the S.E. and South of Pensacola; therefore, in shoaling the water to 14 fathoms, that harbour will be discovered at the distance of about 5 leagues. You may also find the harbour by the depth of water; for, as we have already observed, the depth of water from Pensacola eastward increases, so that there are 10 fathoms at 4 miles from the shore; and from Pensacola to the westward it decreases, that depth is found at the distance of 10 miles off shore.

Those who are off Mobile ought to bear in mind the necessity of getting clear off, so soon as there is an appearance of the wind blowing on the shore, either so as to be able to weather the Balize, or, which is better, to take in time the shelter of Naso Road, as we have already explained; because, with such winds, there is no possibility of remaining at anchor outside the bar of Mobile, as the cables must inevitably part, and the vessel be lost.

Those also who are off Pensacola ought likewise to get under sail, and keep a good offing under similar circumstances; and, in general, they may calculate on weathering the Balize; for on a S.W. course they will go clear of it. To attempt remaining at anchor off the bar, would be an exposure to the same danger as at Mobile.

WINDS.—You have the land-breeze in the morning; but when daylight is well come, the wind comes to the East and E.S.E.; and in the evening it rounds to S.W. This, however, is varied in the time of the Norths; for, when they blow, which generally is with much force, there is neither land-breeze nor change. The forerunner of a North is the wind from South, which blows, with force, for twenty-four or thirty hours before the other comes on. The weather, in the months of August, September, October, and November, is most to be feared on these coasts; for, in addition to heavy winds dead on shore, there are violent hurricanes; and thus, in such seasons, you should never go into less than than 20 fathoms, either in beating to windward or in sailing along it.

APPENDIX.

The subjoined instructions were issued from the Navy Department of the United States Government, in the early part of the year 1851 :—

"That all United States Steamers will carry the following lights when at sea during the night:

A *white light* at the mast head, a *green light* on the starboard paddle box, and a *red light* on the port paddle box.

(Signed)

WM. SKIDDY, *Navy Constructor, New York.*

P.S. I would also recommend the following preventive for sailing ships :—A white light on the bowsprit end, a green light fitted in the forward part of the fore chains, and a red light in the forward part of the port fore chains."